The Theory and Practice of Rolling Steel

By Wilhelm Tafel

Translated from the German by Richard Rimbach

Chapter I—Continued

DIRECT draft, called draft for short, is the difference in the height of the material before and after the pass, that is, a reduction of height in the vertical direction; indirect draft is when the rolls exert a pressure on the material in a nonvertical direction. Accordingly at *m* in Fig. 9 there would be direct, at *s* and *s'* indirect draft. This distinction is somewhat doubtful.

If the parts of the cross-section to either side of *m* are divided into a number of small rectangles, as roughly shown in Fig. 9, each small rectangle is under direct pressure, that is, the original height *H* is squeezed down in a vertical direction to the height of the section-lined rectangles, as for example to *h*.

It will be shown in a later discussion when irregular passes are considered, that the results of practical tests substantiate this explanation. This is no longer the case, if the roll surfaces *cc'* and *dd'* in Fig. 9 exerting the pressure are no longer at an angle to the roll line but perpendicular to it, as is the case in Fig. 5 with the surfaces 3, 4 and 5, 6. Under certain conditions there also can be a draft, that is, a reduction of section (*d*1-*d*2), in a horizontal direction. This is shown by the section-lined outline in the upper half of the pass. These can no longer be resolved into a vertical pressure by cutting up the profile into small rectangles. Indirect draft throughout the text will be taken to mean such a horizontal dimension reduction.

The height *H* of a rectangle *A* in Fig. 4 can be worked down by rotating bodies to the height

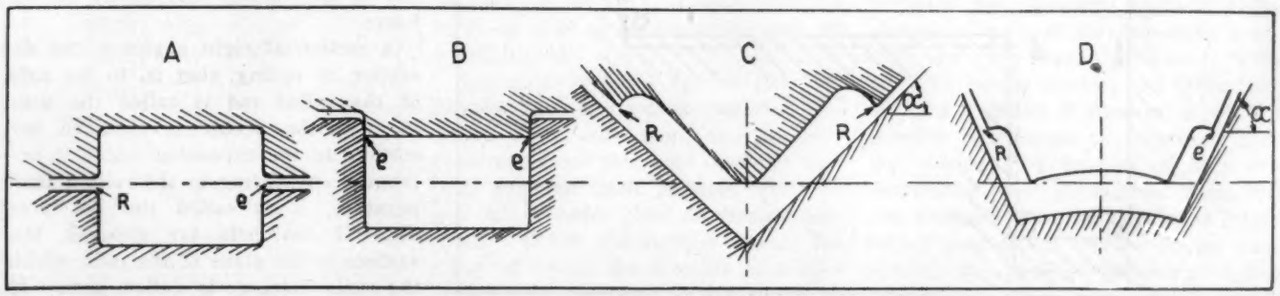


FIG. 3—VARIOUS TYPES OF OPEN AND CLOSED PASSES

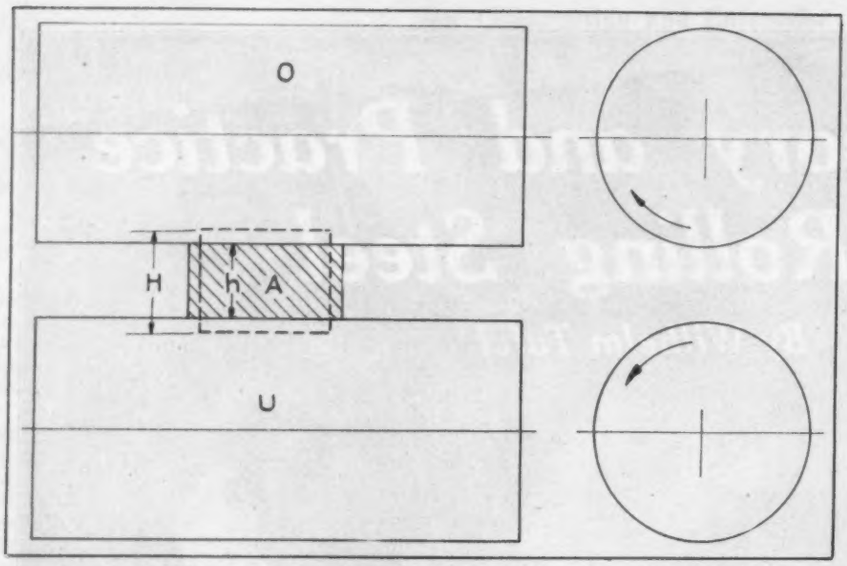


FIG. 5—UPPER HALF OF HEAD RECEIVES INDIRECT, LOWER HALF DIRECT DRAFT

h, in either one of two ways:

1. By using the means already known, letting the piece pass between the cylindrical surfaces of two rolls turning in opposite directions;
2. By letting it be ground between two disk-shaped cylinders as L and R in Fig. 8 which work against one another like two millstones.

Seamless tube rolls depict these two conditions. In general the rolling mill operator makes use of only the form of rolling shown in Fig. 4. In this method of using a grooved pass, as can be seen from Fig. 5, the method of working shown in Fig. 8 will take place. As previously mentioned this is an indirect draft. From this consideration it follows that for roll pass design. The use of indirect draft is only permissable in such parts of the pass as are bounded by different rolls. This is true in Fig. 5 only in the half of the pass which lies above the center line. When the particular part of the cross-section lies in one roll such as the bottom roll in Fig. 5. direct draft only can be used.

The demand placed upon the roll surfaces 1, 2 and 3, 4 in Fig. 5 in working material, is similar to trying to grind grain between two mill stones running the same direction and at the same speed. While indirect draft is impossible in the lower part of the pass in Fig. 5, the reduction in height or direct draft is possible. The broken line shows the rolled material before the pass.

Between the indirect draft in Fig. 8 and at the top of Fig. 5 and the direct draft in Fig. 4 intermediate stages prevail. The indirect draft does not stop at any one certain slope any more than the direct. The usual view is that indirect draft occurs as soon as the pressing roll surface at the line 5, 7 in Fig. 5 is no longer parallel, but at an angle to the roll axis. This theory is as incorrect, as to assume that the draft is direct, as soon as the pressing surface at the line 5, 6 is no longer perpendicular, but at a steep angle to the axis of the roll. Also, in the last case the effect of the rolls is more of a grinding than of a pressing down character; but in addition to the first the latter begins. How these effects gradually change from one to the other, is not definitely known. The author has determined by tests, that the rules

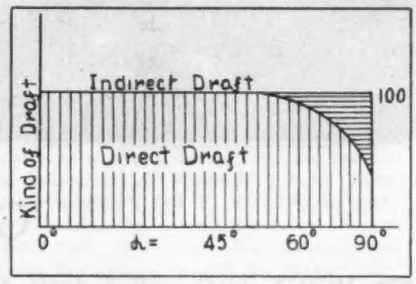


FIG. 6—LIMITS OF DIRECT DRAFT

for direct draft appear to hold fairly well, where the slope of the pressing surface makes an angle of $\alpha = 60$ degrees, with the roll axis as shown in Fig. 7, $\beta = 60$ degrees (angle of cutting-in wedge). The rules hold for $\alpha = 45$ degrees, $\beta = 90$ degrees.

From about $\alpha = 60$ degrees down, the effect of the indirect draft compared with the direct draft appears to get stronger. According, the transition of the one to the other can be assumed to follow the course shown in Fig. 6. From the parallel position $\alpha = 0$ degrees, the material movement depends entirely on the direct draft, with 90 degrees all on indirct; between 45 and 90 degrees it is partly due to the former and partly to the latter.

A section at right angles to the direction of rolling, that is, to the axis of the rolled rod is called the profile. If the profile is enlarged according to the expansion which it undergoes on heating to the rolling temperature, it is called the hot profile. If the rolls are grooved, the surface in the plane of the rolls, which the rolls release, is called pass. If the pass is bounded partly by the

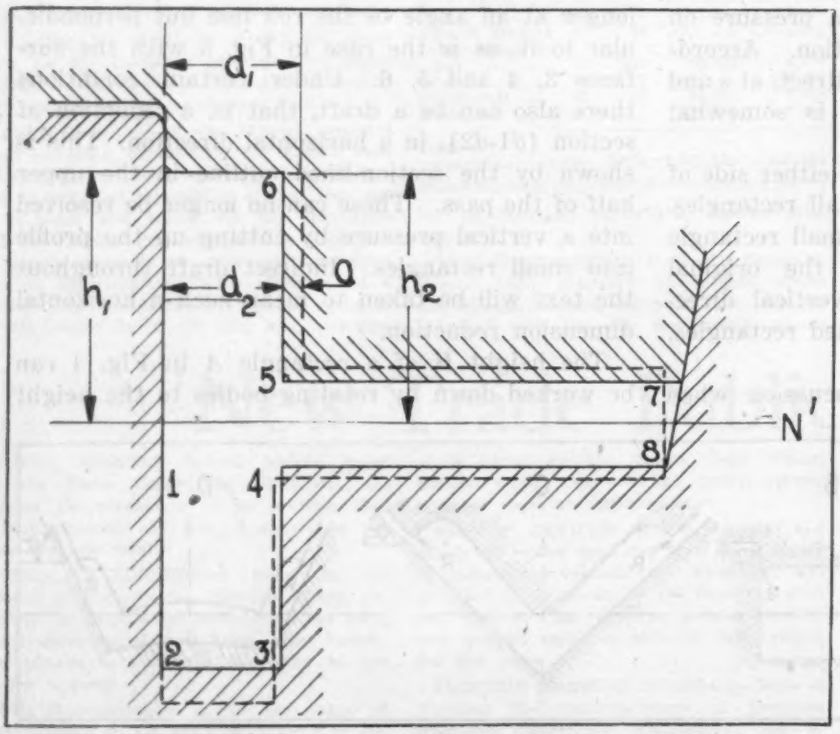


FIG. 4—CYLINDRICAL ROLL SURFACES SHOWING DIRECT DRAFT

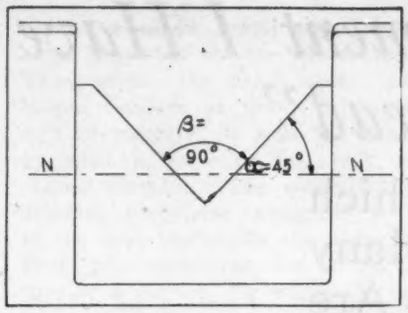


FIG. 7—ANGLE OF CUTTING-IN WEDGE

lower roll and partly by the upper roll, the place at which the boundary changes from one roll to the other is called the parting of the pass. If the parting is formed by lines, which are parallel to the roll axis, it is called an open pass as in Fig. 3*A*, and if they are perpendicular, it is a closed pass as in Fig. 3*B*.

The designation for intermediate position varies. We will consider it an open pass, if the angle between the roll-axis and the pass boundary at the opening (α) is smaller than 60 degrees as in Fig. 3*C*; a closed pass, if it is 60 degrees or larger as in Fig. 3*D*.

α never is exactly 90 degrees because the rolls usually are grooved conically to facilitate the delivery of the rolled material and also, to bring a used pass back to the original shape when dressing. The conical surface, the arc of the angle $R - a$ in Fig. 3, is called taper. It amounts to at least 1½ per cent in all passes; in rectangular sections it is never over 15 per cent. On the other hand in shape passes the taper upward is unlimited.

The rolls turn on their necks. As the compressed material exerts a counter-pressure against them, they must be prevented from moving apart. This is accomplished by using bearing bronzes, which can be replaced in the bearings, called chocks and which,

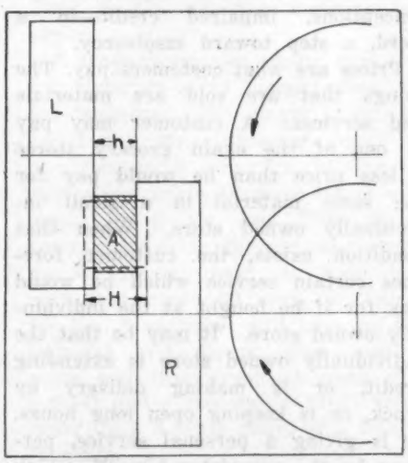


FIG. 8—DISK-SHAPED ROLL SURFACES SHOWING INDIRECT DRAFT

by means of the adjusting screw or wedge, hold the upper chock down, and the lower one up. These parts press together when the stock passes through the rolls; the space between the necks and the bearing bronze, the bronze and the chock, and, between the latter and the adjusting mechanism is diminished. The parts are pressed tighter against one another. This makes for a certain spreading of the rolls which is unavoidable at the instant the stock is gripped. This is called the springing or the spring of the roll. It varies according to the diameter of the roll and the draft to which the stock is subjected and can be taken to vary from 0.039 inch to 0.787 inch; or from 0.5 to 0.8 per cent of the diameter with rod mill rolls and from 0.8 to 1.5 per cent with cogging or structural mill rolls.

Experimental Furnace Data Obtained

After 34 days' continuous operation, the experimental blast furnace operated by the bureau of mines at its Minneapolis experiment station was recently blown out. The primary object of the run was to determine the feasibility of furnace operation on 100 per cent Cuyuna range manganiferous iron ores, and to ascertain the tonnage, fuel consumption, and recovery of manganese which may be expected in commercial operation. It is considered that the test makes distinct progress in utilizing such iron ores and demonstrates the usefulness of such experimental blast furnaces in industrial research.

Records showed a total of 134 tons of iron produced during the test. The manganese content of the metal varied from a few per cent to 15 per cent, while the phosphorus was high in all cases, probably averaging 0.6 per cent. This material is now available for investigating the next step of the manganese problem, and the problem of separating the phosphorus, iron and manganese metallurgically will be taken up in a short time by the bureau of mines.

In addition to regular operating data, over 800 gas samples were taken from various furnace elevations. Temperature and pressure measurements also were made at corresponding positions in the charge column. With the data now available, and those taken on a commercial furnace, it will be possible to compare the reactions taking place in the interior of both experimental and commercial furnaces. Gas analyses made indicate some interesting conclusions can be drawn concerning the path of materials in the experimental furnace as well as in commercial furnaces.

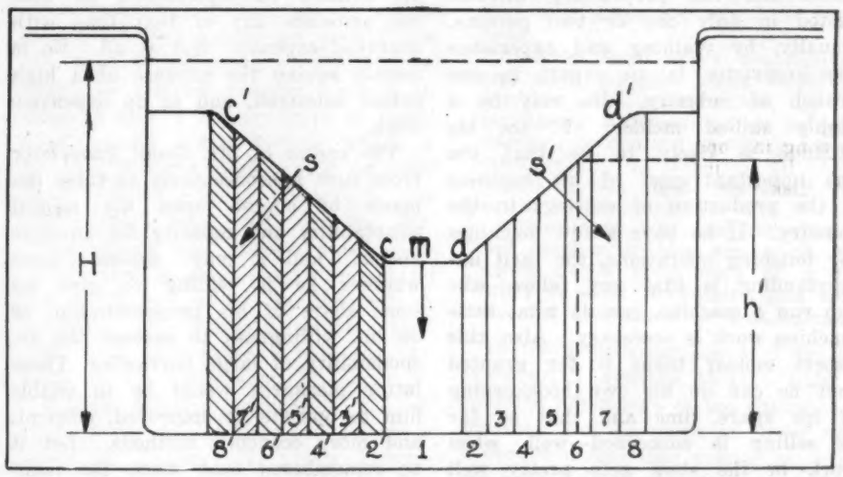


FIG. 9—DIRECT DRAFT OR A REDUCTION OF HEIGHT IN THE VERTICAL DIRECTION IS SHOWN AT M. S AND S′

Studies Bar Tests

Results obtained from parallel impact and slow-bend tests are presented in technologic paper "Comparative Slow Bend and Impact Notched Bar Tests on Some Metals," by S. N. Petrenko, issued recently by the bureau of standards, Washington. The primary object of the experiments was to determine whether a slow bend test might be used as a substitute for an impact test, or as a valuable addition to it, as well as to determine also its practicability.

The data obtained by the tests indicates that a notched bar test requires more care from the operator than an impact test, and that the slow bend machine itself is more likely to get out of order than an impact machine. Other conclusions cover the effect of speed, the fracture of a specimen, and changes in the shape of notch used.

"With My Small Establishment I Have Practically No Overhead"

A Short, Pithy Article in Which the Author Shows How Many Proprietors of Small Shops Are Fooling Themselves on Costs

By W. D. Stowe

CERTAIN problems attach to the small shop which arise out of the very fact that it is small and the proprietary interest vested in only one or two persons. Usually, by training and experience the proprietor is an expert in one branch of industry. He may be a highly skilled molder. If so, his attitude is likely to be that the one important part of his business is the production of castings in the foundry. If he buys a few machines for finishing operations, the tacit understanding is that any fellow who can run a machine, can do what little machine work is necessary. Also, this expert molder takes it for granted that he can do his own bookkeeping in his spare time and that so far as selling is concerned—well, when work in the shop gets pretty well caught up, he will leave it for a few hours and see if Tom Smith or Bill Brown of the Blank Mfg. Co. will let him make up some "more of those bushings, at the same figure."

Matters are likely to be viewed in much the same light where an expert machinist happens to start a shop of his own. However, he knows that the quality of the machine work is the important thing. He adds a little foundry to his plant, but "most any one that can pour metal, can make castings."

Mr. Small Proprietor then proceeds to establish beyond contradiction that he has been trained an expert mechanic rather than a trader or a commercial man. He says in his heart, and sometimes aloud, "I have practically no overhead at all." To him lighting, heating, insurance, taxes, power, haulage, freight, and possibly even rent and fuel are mere incidental small things for which one naturally pays when these little bills happen to come in, that's all. When Mr. Small Proprietor leaves his customary manual work in the foundry or the machine department; lets his equipment stand idle a half day or day while he does a little selling work, or attends to some extra large buying, or answers his belated correspondence, he does not associate any of that time with overhead expense. Not at all. He is merely *saving* the expense of a high priced salesman, and of an expensive clerk.

The rescue of Mr. Small Proprietor from such misconceptions as these depends of course upon his mental adaptability and capacity for business vision; and it may depend upon whether he is willing to give up some share of his proprietorship, or on his willingness to assume the responsibility of large borrowing. These latter measures would be to enable him to operate by improved, efficient, and more economic methods. Let it be remembered that when the manager-proprietor does manual work himself, he thereby employs the most costly class of labor, whether it is in the class of productive or non-productive labor, direct or indirect expense. Perhaps the only possible overhead item which a manager-proprietor eliminates by himself doing manual labor, is the item of idle time and idle time of a low priced employe can be eliminated in better way than by an employer doing the work personally which should be done by an employe.

Consider a more subtle error; an almost universal iniquity, which though not confined to the small proprietor, is to him deadly in its effects. It relates to his attitude toward competition.

The retail grocer, the retail clothier, the lawyer and the doctor appear to have learned a lesson which the local jobbing shop proprietor rarely has learned. Both the retail merchant and the jobbing shop proprietor have this common to their industries—that each may start business with a relatively small capital. Therein lies partly the explanation for the strength in numbers and general weakness in stamina of jobbing shops.

It is instructive to inquire how the retail merchant has answered the challenge to his business acumen presented by the fact that a hundred of a kind may exist in the same city or the same county. They prosper side by side, and the proprietors maintain a decent standard of living.

The underlying reason is that generally the retailer is a commercially trained man rather than a man trained as an artisan. The merchant has learned that he *does not sell prices.* The merchant really may have a leader which he sells without a margin to cover either indirect expenses or any profit; but it will be only a lead. The mass of the merchant's sales are made at a real margin over material cost, and that margin is sufficient to provide for indirect or overhead expenses, and also usually a profit. When that ceases to be the general rule, the retail merchant as well as the small foundryman is pulling down the fabric which supports him. He is taking a step in the direction of deteriorating equipment, antiquated stock in trade, stagnation rather than advance in business standards and conceptions, impaired credit—in a word, a step toward insolvency.

Prices are what customers pay. The things that are sold are materials and services. A customer may pay in one of the chain grocery stores a less price than he would pay for the same material in a small individually owned store. When that condition exists, the customer foregoes certain service which he would pay for if he bought at the individually owned store. It may be that the individually owned store is extending credit, or is making delivery by truck, or is keeping open long hours, or is giving a personal service, perhaps by the proprietor himself, which the customer is willing to pay for

beyond what he would pay for the same material at the chain store. Thus while the chain store sells larger volumes at lower prices per unit of material, it sells by system, by what is more or less bulk and volume methods. The successful individual proprietor alongside it or in the next block sells the same material plus something else in the nature of a service, for which the customer willingly pays a higher total price.

The successful small individual merchant does not say in effect, even when business is a little dull, "Please, mister customer, if you will only buy from me I will give you the same price that the chain store grants, and I will also include the old credit, locate in the same convenient place for you, keep open till 9 o'clock every night, and still give you the chain store prices for the total."

In contrast to this, what is the attitude of the small foundryman, who has been thinking all his life, heretofore, of the art and science of the constructive measures of industry, rather than of commerce as relating to the exchange of goods and services? First, he decides to set up in business for himself. He goes to a few of his trade acquaintances and says. "You've been paying Thus & Co., 25 cents per pound for No. *A* castings. Let me have the business at the same price, as a friend." He goes to others, not of his special acquaintance and says, "You've been paying So & Co., 25 cents per pound for No. *A* castings; I'll make them for 24 cents." Our new foundryman gets both orders. In due time So & Co. and Thus & Co., with equal folly, go to their former customers and say "We'll make those No. *A* castings for you the same as we used to make them, but for 23 cents per pound." So & Co. and Thus & Co. get the business back again.

A trade depression occurs and every proprietor is more hungry than ever for business. The smart purchasing agent for Mr. Customer sends out inquiries to a long list of vendors, requesting prices on more No. *A* castings. So & Co. and Thus & Co. sense what is in the air, and straining to retain their old time business they quote 20 cents per pound for No. *A* castings, well knowing that material and direct labor cost 18 cents and that overhead costs them 5 cents and a reasonable profit should bring them 2 cents more, or a total of 25 cents.

Then our New Foundryman rises up, primed at heart with his big idea. He smugly says "I don't have any overhead—anyhow not so much! So & Co. and Thus & Co. have to hire bookkeepers, stenographers, even foremen! They have a big overhead. I'll go out and get that casting business at 19 cents per pound. I need it."

Mr. New Foundryman get the big order. He proceeds immediately with the work in his shop, doing as much upon it personally as he can to keep down the cost and also does all he can of the overhead work of his shop as usual. Thus instead of doing the real work of ownership and management, conceiving plans for future business, cultivating new trade relations, devising new production methods, preparing for changes in business conditions which must take place month by month, all of which should produce salary or profits for Mr. New Foundryman of $10,000 per year; he instead reduces himself to what to him is the drudgery of bookkeeping and letter writing which a properly trained clerk would do with many other things cheerfully at $1800 per year. Of course, Mr Foundryman does enough molding to cover what a good molder would do for $2500 per year. In the end he foregoes all business profits that year and also takes a net loss of $500 on his investment.

In the writer's observation, the effect of all this selling of prices is about as follows: Mr. New Proprietor struggles along; So & Co., while a little bigger and better established, only struggle along, and Thus & Co. struggle along. Mr. Customer's purchasing agent has been brought to think, by all this lowering of prices with each successive depression, that all these foundrymen were formerly rather in the class with which we associate holdup men and bandits. Mr. Customer doesn't seem to be getting deliveries as promptly as in the former times; the goods he buys show no progress in the local foundry industry. These foundrymen usually seem to be caught without any material on hand when an order is given them. Mr. Customer thinks he gets 88-10 and 2 when he orders it. No, he hasn't had the castings analyzed. Sometimes a foundry will run a little off mixture; and under some circumstances only little more than a guess can be made as to the real composition of the castings made.

If the managing executive of Mr. Customer paid especial attention to work lost in his own machine shop from defective castings, comparative costs of labor for jobs done by his Sunday repair gangs; frequency of replacing parts made from castings of local foundries as compared with former times, he might not be so entirely content when his purchasing agent smilingly informs him that while a few years ago he bought castings at 30 cents per pound, he now gets the same thing for 19 cents.

We turn from this side of the picture to the question of what is the remedy. If by temperament, the small foundryman insists on continuing suggestions, as tending to promote not merely a profitable foundry industry, but a progressive one:

Adopt a standard accounting system throughout the local foundry district, so that there may be a uniform basis for comparison of production costs.

Forget the fetish that any shop can operate with no overhead; or that any proprietor can beat overhead.

Develop local trade associations, and each member abide faithfully for his own preservation, by all legitimate agreements, as to cost finding, estimating methods, trade ethics, etc.

Sell goods and services; not prices or discounts.

Consolidate into one corporation, not necessarily into one plant, the small single proprietors of a district, so that productive and commercial operations is economical.

To the purchasing agent of the big customer, I venture this: It is of doubtful advantage to the customer in the long run, to place an order with a vendor unless that vendor by filling the order will reap a distinct and considerable advantage. Under all ordinary conditions the particular advantage to the vendor should be the making of a reasonable profit.

Billet Extras Quoted By Eastern Mills

Philadelphia, Sept. 22.—Eastern makers have put into effect a definite schedule of extras and differentials on steel billets. The schedule in effect at the present time is as follows:

Extras for Size

	12,000 lbs. and under each	Over 12,000 lbs. each
4 x 4 in up to but not including 10 x 10 inch	Base	$7.00
10 x 10 inch up to but not including 16 x 16 inch	$2.00	9.00
16 x 16 inch up to but not including 20 x 20 inch	4.00	11.00
20 x 20 inch up to but not including 24 x 24 inch	6.00	13.00

On billets under 4 inches square $2.50 extra for size.

Extras for Carbon

	Per gross ton
Up to and including 0.25 carbon	Base
0.26 to 0.60 carbon inclusive	$1.00
0.61 to 0.99 carbon inclusive	2.00
100 to 125 carbon inclusive	3.00

Where range of carbon is specified, extra is to be based upon the mean of such carbons.

For silicon 0.15 minimum $2.50 per gross ton.

Fig. 1—General view of group of buildings recently erected for the Continental Gin Co., Birmingham, Ala. The fourth unit is being built at the extreme right

Completes New Southern Plant

Engineering Company Selects Site, Designs Buildings, Erects Plant and Delivers It Ready for Production to Southern Machinery Manufacturer —Description of Foundry Department

REPRESENTING an investment of $1,500,000 the plant just completed at Birmingham, Ala., for the Continental Gin Co. is considered a credit to the company and a harbinger of industrial expansion in the southern states. A total floor space of 500,000 square feet is provided in the nine buildings arranged in four major groups including a foundry, machine shop, boiler house, assembly building, woodworking plant, warehouse, dry kilns, lumber storage and pattern shop.

One of the interesting features of the project and one that probably will be observed more frequently in the future is that one engineering and building firm carried the job through from beginning to end. The service of the H. K. Ferguson Co., Cleveland, began with the selection of a building site and followed through with design and construction of the buildings, installation of railroad sidings, plant layout, selection and erection of equipment, sprinkler system, lights, etc. The plant was handed over to the owner ready to go into production. In fact so well was the work planned and carried out that approximately one half of the plant capacity was engaged in production several months before the entire plant was completed. Ample provision has been made for future expansion.

The Continental Gin Co., first was formed in 1901 by the union of several Southern and New England interests engaged in the production of machinery used in the cotton industry. Two plants were erected in Birmingham, Ala., and one in Atlanta, Ga. Experience gained over a period of many years has justified the early

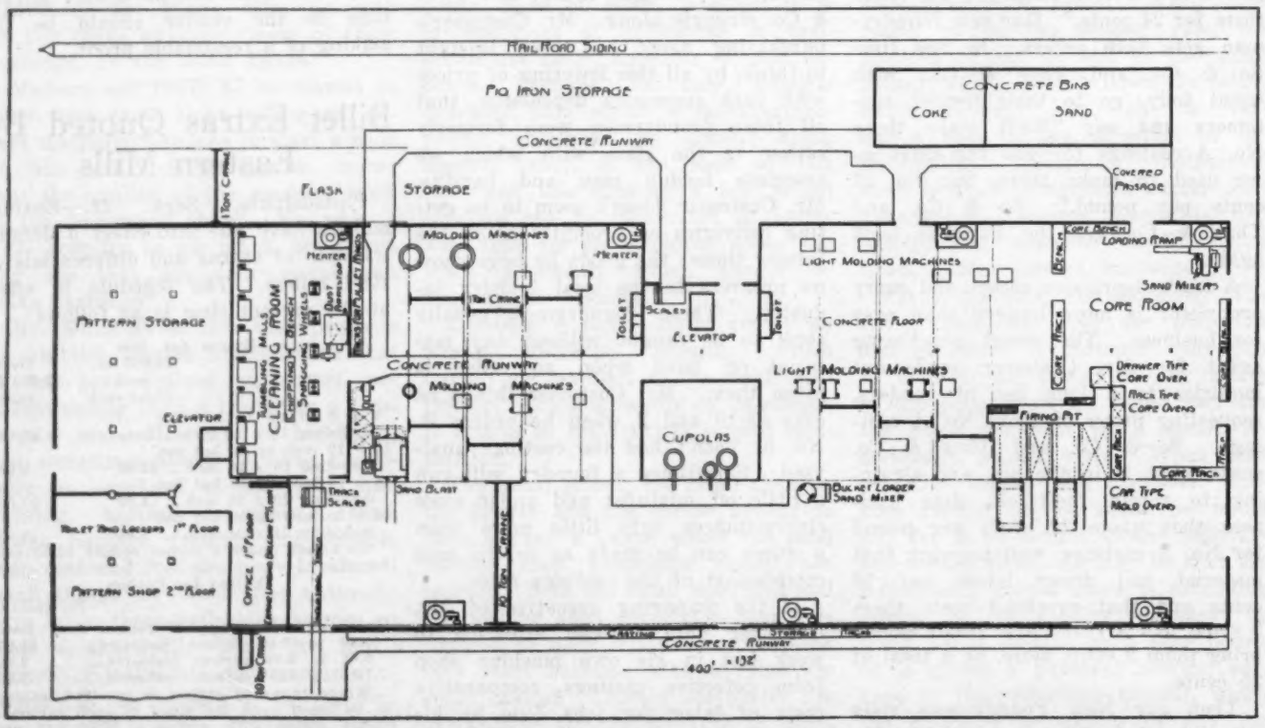


FIG. 2—LAYOUT OF THE FOUNDRY BUILDING SHOWING LOCATION OF VARIOUS DEPARTMENTS AND PIECES OF EQUIPMENT

judgment of the company in its selection of a southern location for its manufacturing activities. Decision to erect the new plant in Birmingham was based largely on this experience. The work formerly done in the two Birmingham plants together with part of the work handled in the Atlanta shops in future will be done entirely in the new plant. However, a certain line of machinery still will be manufactured in Atlanta.

A fairly accurate conception of the general outside appearance of the plant may be gathered from the illustration shown in Fig. 1. The layout of the foundry showing the relative positions of the various pieces of equipment is presented in Fig. 2.

The pattern storage of reinforced concrete construction 60 x 132 feet extends all the way across one end of the foundry building from which it is separated by a wall and suitable fire doors. At present it is a two story building, but the necessary provision has been made for the addition of a third story when conditions warrant. Part of the second story 50 x 60 feet has been fitted up with the usual machinery and equipment for a pattern shop. The foundry office is on the first floor, below and in front of the pattern shop. The roof serves for a storage and loading balcony for large flasks, patterns and loads of lumber in transit to and from the foundry. The material is handled by an elevator in the pattern storage and by a 10-ton crane in the main bay of the foundry.

With a view of reducing the fire hazard the cleaning room 40 x 80 feet is located between the foundry and the pattern storage and is separated from each one by a brick wall that extends to the roof. Heavy castings are conveyed into and out of the cleaning room on an industrial track. Light castings are handled on an electric lift truck. The weight is taken on a track scale located in the main bay of the foundry outside the cleaning room entrance.

The cleaning room is equipped with eight tumbling barrels of various sizes both round and square and with five double stand grinders all piped to a dust arrester. A large sandblast chamber using steel shot as an abrasive is located on the outside of the cleaning room at the corner which touches the main bay. Castings are loaded on a carriage operating on a short track which extends to a point on the floor where the carriage may be loaded and unloaded by the crane. The chamber is 10 x 12 x 7 feet and is connected to a suitable dust arrestor.

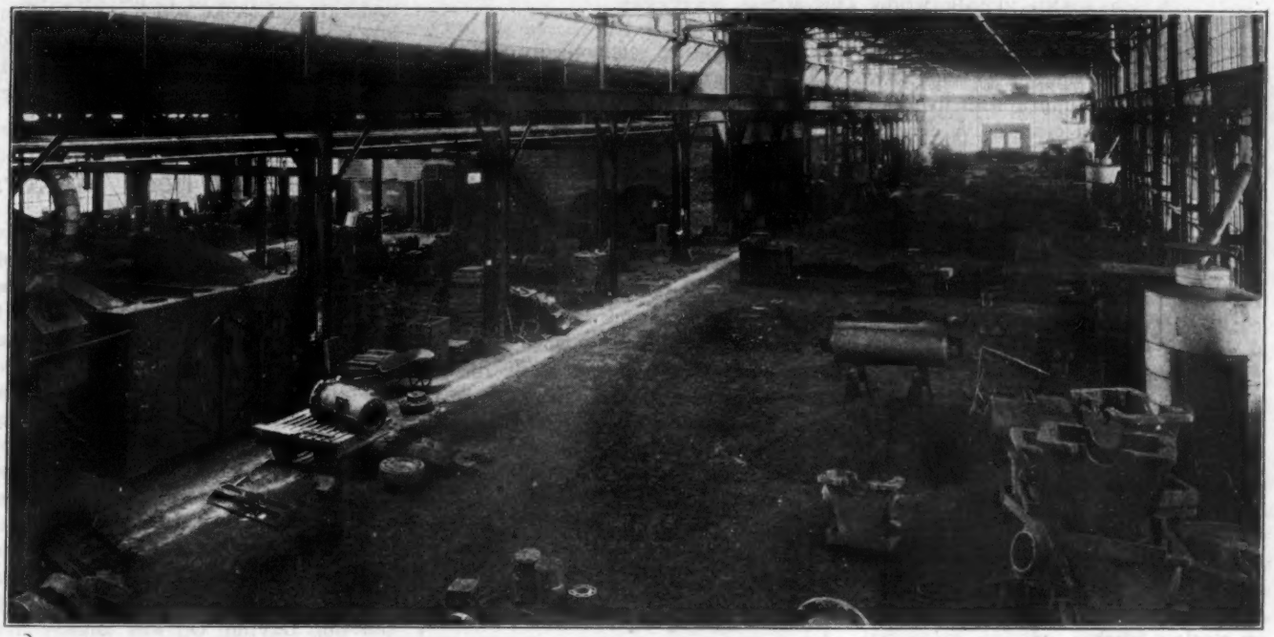


FIG. 3—WINDOWS IN THE SIDE AND END WALLS AND IN THE ROOF FLOOD THE FLOOR WITH DIFFUSED DAYLIGHT

Molding Floors

High side walls insure adequate light and ventilation supplemented by a liberal amount of top hung sash in the monitors. Seven pipeless heaters arranged along the sides, four on one side and three on the other side as shown in the plan Fig. 2, furnish all necessary heat.

The core room 60 x 80 feet is located at the opposite end of the foundry from the cleaning room and is separated from the molding floors by a brick wall 4 feet high. It is connected with the concrete sand bins on the outside of the building by a covered passage. The sand is prepared in two revolving paddle type mixers erected in the corner of the core room in the vicinity of the covered passage entrance. Small cores are dried in one drawer and in two rack type ovens. Large cores are dried in a battery of four large car type ovens which open into the main bay of the foundry and which also are used for drying many of the molds made in this department. The ovens are fired with coke from a single firing pit under the floor. It is claimed that coke breeze up to 75 per cent of the total amount of fuel is used successfully in the firing chamber. Two ovens are 7 feet wide, two are 10 feet wide and all four are 16 feet deep by 8 feet high.

Molding floor area is divided into three sections devoted to the production of three main classes of castings. All the heavy castings are made in one long bay which extends the complete length of the foundry. This bay is served by a 10-ton crane operating on a runway 25 feet above the floor. Facing sand is prepared in this bay in a 6-foot revolving pan mill equipped with a bucket loader. Light castings are made on approximately one half of the remaining floor space shown above and to the right in the floor plan Fig. 2. The floor in this section of the foundry is laid in concrete and the molds are made on a battery of molding machines. Three light traveling cranes handle the ladles in this section, also many of the molds beyond the lifting capacity of the operators.

The third molding section shown in the upper center in the illustration is

FIG. 4—THE PATTERN SHOP IS EQUIPPED WITH THE NECESSARY TOOLS TO MAKE AND REPAIR WOOD AND METAL PATTERNS

devoted principally to the manufacture of pulley castings of various sizes. This section is equipped with five hand operated overhead cranes. A concrete gangway extending through the center connects this department with the cleaning room to the left and the two remaining molding sections below and to the right respectively as shown in Fig. 2.

Three cupolas erected approximately in the center of the building and with the spouts projecting into the main bay, supply the molten iron. Two of these cupolas 54 inches in diameter are used alternately to melt the greater part of the iron required. The third cupola 42 inches diameter is used to melt special iron for the gin ribs. Iron is distributed by the crane in the main bay and is taken into the other two bays in ladles mounted on electric trucks.

Coke and iron charges are made up in the storage yard between the building and a railroad siding. They are brought to the vicinity of the cupola building and weighed while on an electric truck. Then they are lifted by a hoist with a capacity of 2000 pounds and charged directly into the cupola. A concrete runway extending the full length of the yard and with branches connecting with concrete gangways in the building, greatly facilitates the movement of the trucks employed in conveying material from place to place. The iron is stacked openly in the yard, but the coke is kept in a concrete storage chamber adjoining others containing molding sand and core room supplies.

Plant Layout Is Efficient

The machine shop is 150 x 400 feet with a space 30 x 40 feet partitioned off at one end for a blacksmith shop. It is divided into three longitudinal bays and in addition to the regular machine shop equipment is provided with many special tools designed primarily for dealing economically with the product manufactured in this plant.

Yearly consumption of pine lumber by the Continental Gin Co., amounts to 5,000,000 feet. The lumber first is stored back of the machine shop from which it passes through the drying kilns into a lumber shed 80 x 150 feet and thence to the machines where it is dressed and trimmed to size.

Three simultaneous lines of production pass through the wood working plant 150 x 200 feet. Each line is directed to the point where it is to enter the general assembly. The board is not turned from the time it is placed on the kiln truck until it enters the assembly department. The shavings are blown to the boilers where steam is raised to drive a generator which furnishes power to the mill. Exhaust steam is utilized to heat the kilns and part of the buildings in the winter.

Sheet metal and paint department are housed in a building with steel frame and brick pilasters. The prepared wood flows through this building 150 feet in length. The various parts of the finished product meet at predetermined points in this department and the finished unit is tested under power before it arrives in the paint shop. A fire wall separates the paint shop from the adjoining building. Materials are stored in a battery of 13 underground tanks which may be filled either from inside or outside the building. The various ingredients are passed to the mixing room through pumps which measure the amount.

Manufacturers of Equipment

Air compressor
Ingersoll-Rand Co., New York
Air lifts
Whiting Corp., Harvey, Ill.
Blower
B. F. Sturtevant Co., Boston
Core and mold ovens
Foundry Equipment Co., Cleveland
Cupolas
Whiting Corp., Harvey, Ill.
Dust arresters
Pangborn Corp., Hagerstown, Md.
Electric cranes
Harnischfeger Corp., Milwaukee
Electric lift trucks
Automatic Transportation Co., Buffalo
Elevators
Otis Elevator Co., New York
Geared ladles
Whiting Corp., Harvey, Ill.
Grinding machines
Springfield Grinder Co., Bridgeport, Conn.
Hand cranes
Whiting Corp., Harvey, Ill.
Hand lift trucks
Barrett-Cravens Co., Chicago
Heaters
American Blower Co., Cleveland
Motors
General Electric Co., Schenectady, N. Y.
Molding machines
International Molding Machine Co., Chicago
Safety switches
Square D Co., Detroit
Sandblast equipment
Pangborn Corp., Hagerstown, Md.
Sand mixer
National Engineering Co., Chicago
Scales
Howe Scale Co., Rutland, Vt.
Tumbling mills
Whiting Corp., Harvey, Ill.

Grinding Wheel Makers Hold Meeting

Pike, N. H., Sept. 19.—Grain standardization, comparative grade scales, and safety hoods for grinding wheels were considered at the ninth annual convention of the Grinding Wheel Manufacturers Association of the United States and Canada which was held at the Lake Tarleton club, Sept. 17-19. Representatives of the abrasive industries were present from Canada and all parts of the United States as far west as the Mississippi river and as far south as Birmingham, Ala. Frank R. Henry, A. A. Simonds-Dayton Co., Dayton, O., was unanimously re-elected secretary. A. H. Kean, Bridgeport Safety Emery Wheel Co., Bridgeport, Conn., presided.

The comparative grade chart, which is now nearly completed, was exhibited by Harvey Byers, Abrasive Co., Philadelphia. This chart will permit of ready comparison of the grade markings of the different grinding wheel manufacturers. Its preparation represents a part of the program of simplification and standardization which the association has been working on for several years with the cooperation of the department of commerce.

In the report of the safety committee, which was accepted, cast iron hoods are permitted for speeds up to 7000 surface feet per minute and fabricated or other suitable hoods for speeds up to 10,000 feet.

Clifford S. Anderson, Norton Co., Worcester, Mass., and Dr. J. E. Edgerton, Nashville, Tenn., president of the National Association of Manufacturers spoke at the annual dinner, Sept. 18.

Need Railroads' Co-operation

Industries Suffer From Loss of Business Due to Carriers Going Into Manufacturing Lines — Reasons For Their "Making It Themselves" Now Largely Removed

By Charles J. Graham

FOR a number o fyears prior to and during the war, the railroads of the United States had a supreme struggle for existence brought about particularly through a lack of public support, culminating in a reaction which practically destroyed the morale of the entire railroad organizations and created a lack of efficiency which placed our transportation systems in a position where it was impossible to handle our products during peak periods.

The assumption of railroad control by the government during the war was the one move necessary to bring forcibly to the attention of the public, to industry, and to the government at Washington, the true picture of the serious hardships under which the railroads had been operating; and, as a result of the terrific losses sustained during this period, to a full realization that something radical must be done to save our transportation systems from absolute ruin.

Publicity resulting from government control, created a wave of sympathy throughout the entire country, which rapidly grew in such volume that today, instead of the railroads being the football of the public, of industry generally, and of our lawmakers as a whole, they have public sentiment behind them as never before in history, and have been given an opportunity to show their possibilities.

As a result, our great transportation systems, under highly efficient management, have demonstrated their power to operate successfully, and have staged the greatest comeback in a period of five years ever attained in any line of endeavor. The nation has come to a full realization that the railroads belong to it, and are operated entirely for its benefit, and are really its backbone; and, partially as a result of this feeling, and as a result of the ever present "square deal" between the employes and the management, there has been a return of morale to a point not reached in a decade.

Under this new scheme of things there has been a great increase in efficiency, and today the roads are securing at least a 25 per cent increase in manpower over the war period.

As an example: Had one of our large systems, owning approximately 250,000 cars, been operating in 1923, the peak traffic year up to that time, on the basis of 1918 efficiency, it would have required 60,000 additional cars to handle its traffic.

While the rate structure of the country has not been adjusted as yet to give the railroads the return contemplated by the transportation act, they have at least been given an opportunity to live and make a return, while lower than it should be and to which they are unquestionably entitled, better than in most other lines of competitive industry. Competitive industry generally is facing a crisis today almost as serious as that which confronted the railroads ten years ago, but for an altogether different reason.

As a result of conditions existing during the war, large increases in capacity in all lines were created and we now have an over capacity in in almost all of our leading commodities running, in some cases, as high as 40 per cent. As a result of unbridled and uneconomic competition, brought about by not only this over capacity but by the operation of restrictive and burdensome legislation, industry generally has been unable to make a fair return on invested capital and is having the same struggle for existence heretofore experienced by the railroads. Therefore, industry should, through proper publicity, place its position squarely before the public, the railroads, and the government, and ask for a square deal and their moral support in trying to bring about a healthy condition in this, the heart of American commercial supremacy.

The operation of our major industries practically without profit, and in a great many cases at a serious loss, is uneconomical and a detriment to the proper growth and expansion of our country as a whole and the correction of such a condition is as important to the life blood of the nation as it was to give the railroads a chance to recuperate.

Industry is in a new era. The great speculative periods heretofore existing in our business life have become a thing of the past, and opportunities do not arise to recoup in what might be termed "boom periods" the losses sustained in periods of depression.

The unhealthy periods of inflation forced upon our railroad systems, to enable them to obtain material on which to operate, the necessity to become manufacturers of many of their needed commodities, so they stand in the unique position of being not only in the transportation business, but very active competitors in a number of manufacturing lines. As a result of this, many industries must now appeal to the railroads for their co-operation and support in throwing back to the manufacturing interests that to which they are justly entitled.

This condition was brought about by circumstances beyond the control of industry as well as the railroads.

How Railroads May Help

THE accompanying article is a remarkable statement by the president of the Bolt, Nut and Rivet Manufacturers association, addressed to railroad and industrial executives, and is of national importance. It is an appeal from a manufacturing industry to the railroads, made in the hope of inducing the latter to withdraw from manufacturing enterprises and to confine their activities to transportation.

The writer points out that circumstances which forced railroads to go into the manufacturing business have been removed; that the public's attitude toward the railroads has changed, and the period of depression for them has passed. On the other hand, certain manufacturing industries still suffer severely from the effects of over-expansion of facilities, and the depression which followed the war. One of the principal causes of the continued losses and misfortunes in these industries is said to be "railroad competition." In its broadest aspect the article is an appeal for economic co-operation between railroads and industrial management.

As manufacturers confine themselves entirely to their given lines, developing always to a point of low cost production, so should the railroad executives confine themselves exclusively to their business of transportation to develop it to the fullest extent, the best of transportation at the lowest possible cost, rather than have a part of their time and effort engaged in industrial problems.

Industry today has reached such a stage of development and specialization that it cannot be operated successfully as a side line; and, it can be stated without fear of contradiction, that, should the railroads cease entirely their manufacturing activities, they would not only be able to secure all their materials within a reasonable time, but save many millions of dollars per year, vastly more than sufficient to pay a large return on their capital invested in such manufacturing properties, and, in addition, would enable them to confine themselves entirely to the problem of transportation, which is in itself, enough for any organization to solve.

The bolt, nut and rivet industry of the United States has an investment exceeding $150,000,000; and, as a result of over production, unbridled competition, and other causes beyond its control, reached a stage in 1924 where its net losses ran to approximately $1,000,000 per month, and to the point where a number of manufacturers were facing absolute bankruptcy. This industry reached a state of complete demoralization, and, as a matter of self-preservation, was compelled to make a right about face, gather its forces, and make a careful study of its condition.

This period of study developed an almost unbelievable situation. It was found that since the inception of the industry, not one constructive move had ever been attempted by the industry as a whole, that all the time and thought of the individual manufacturers was to develop their industrial plants and companies regardless of their competitors, and, if it became necessary, to carry on in an endeavor to put competitors out of business. In other words, it found the whole basis of its past business experience and methods had been built on selfishness. Countless evils had crept into its business methods and no effort of any kind had ever been made to eradicate them. They were fostered and developed to a point where they became the controlling factors.

The first constructive move was started in August, 1924, and, the items given the most careful consideration were uniform cost accounting, standardization, the elimination of waste, uniform kegs and packages, all in line with the policy of, and the three latter in co-operation with, the department of commerce. Last but not least, the throwing open to competitors of practically all of its plants so that all would have an opportunity to benefit from the experience and example of the low cost producer, the company with small capital to have the full knowledge of the accomplishments of the company with unlimited resources, and to install improvements without the large experimental expense necessary in developing work.

In other words, the chief object of this industry is to have every plant operate on as low a cost basis as possible so that all will have an equal chance in profits or losses, and the great saving attained by such methods be handed down to the ultimate consumer.

One of the biggest problems it had to face was over-production and to find ways and means to fill the gap between a 60 per cent operation under normal conditions and the hoped for 100 per cent. It developed, after investigation, that, for reasons heretofore stated, almost all railroads and large industrial consumers of its product had installed machinery to take care of at least a portion, if not all, their own requirements. This, then, was found to be the most productive field on which to begin its work.

A railroad department was installed and a careful study made to determine as to whether or not material could be sold by the industry to the railroads at lower than their own cost of production, and, in all cases investigated up to the present time, this was demonstrated conclusively.

The bolt, nut and rivet industry, therefore, makes an appeal to all the railroads for an opportunity to demonstrate its ability to make them a large saving in this commodity, to ask their hearty co-operation in an effort to live, to permit of an economic operation of its plants and to produce for the railroads, not only a superior article at less cost, but to enable them to largely increase that item for which they are striving at all times, additional traffic.

It should be the aim of the railroads to foster industry and not compete with it. Industry is largely responsible for the revenue on which the railroads exist. Their co-operation will not only increase revenue as a result of increased traffic, but will be a great saving in the purchase of material rather than its manufacture.

Let the slogan of industry and the railroads be "Live and Let Live." Let each strive for the other's interest. It is purely a mutual proposition and is only carrying out the basic principle of our earlier education, "Help one another." The benefit of such a policy is, in the end, for the public as a whole and is what every interest should, in this twentieth century, be striving for.

The executives of the bolt, nut and rivet industry, therefore, go on record assuring a spirit of fair dealing, of honesty of purpose, of a new code of ethics in business, and earnestly solicit the full co-operation of all railroad and industrial executives in their endeavor to salvage what is left of their life's work, to make of their industry something of which they may be justly proud, and to enable what is now a cripple in American commercial life to walk uprightly once again.

Metal Trades Employment Grows

An increase of 8594 in the number of persons employed in shops represented in the National Metal Trade association is reported in the current issue of the association's Labor Barometer. The number employed in August averaged 597,376 compared with 588,782 in July. The report shows a steady increase in the number employed since March. Average weekly earnings in May amounted to $26.78, while the latest figure, for June, shows a decrease to $26.49.

Tests Steering Gear

The hydroelectric steering gear for the airplane carrier SARATOGA has successfully passed a rigorous acceptance test before naval and shipbuilding experts gathered at the shops of the American Engineering Co., Philadelphia. This gear, which weighs 110 tons, is said to be the largest ever built. Four double-ended rams, 24 inches in diameter, moving in hydraulic cylinders, operate two links that run aft to the rudder. Oil, which is used as the hydraulic medium, is forced into these cylinders by hydraulic pumps connected direct to electric motors. The pump and motor units are in duplicate, so arranged that they may be used selectively, and provision is made for a quick change from one unit to the other. Tests showed that the gear can deliver a twisting moment of 70,000,000 inch-pounds on the rudderpost. The SARATOGA, on which the gear will be installed at the plant of the New York Shipbuilding. Co., Camden, N. J., is 895 feet long and will have a speed of 31 knots.

Open Notches with Gas Lance

Hard Holes at Open-Hearth and Blast Furnaces Present No Tapping Difficulties When Oxygen Is Employed—Lance Used To Drain Soaking Pits and To Loosen Frozen Ladle Stoppers

By E. E. Thum

AN oxygen lance is a familiar tool to the blast furnace operator. In numerous places it is used for routine tapping, displacing the old sledge and bar. Nearly all blast furnaces have the lance equipment in stand-by condition, ready for emergencies, when strength and awkwardness is unable to open iron or cinder notch, or when a tuyere is badly frozen.

Open-hearth superintendents are not as familiar with its advantages. Yet an analysis shows it to be no less economical about the steel furnace. For this reason the unit has been adopted as standard practice for opening tap holes by one of the large steel corporations. In many other places it is part of the equipment of a teeming platform. Recently it has been used to good advantage in the soaking-pits.

The oxygen lance is a means of burning a hole quickly through steel, slag or brick. Essentially it is nothing but a stream of pure oxygen flowing through a small iron pipe. If the oxygen strikes hot iron or steel, the metal burns rapidly, and the molten oxide flows out of the hole or is blown out by excess gas. If the oxygen strikes non-metallic substances, like firebrick or slag, the lance pipe itself burns, produces the necessary heat and flux to melt the way through.

The author, E. E. Thum, is associated with the Linde Air Products Co., New York.

Bulky Equipment Not Desirable

Considerations of safety and economy demand a certain minimum of equipment, as shown in Fig. 1. In the first place the oxygen cylinders must be removed from possibility of getting splashed with hot metal or slag. If a spot on its surface becomes heated through to the kindling temperature—which is fairly low when iron is exposed to highly purified and compressed oxygen—that spot will burn out in a fraction of a second and the outrushing gas will open up a larger hole and exhaust the cylinder rapidly.

Fig. 1 shows three oxygen cylinders in a buggy connected to a manifold which assures an adequate supply even for hard deep holes. This gas then passes through a manifold regulator or a reducing valve which is built to pass a much larger amount of oxygen than would be required by welding equipment. It contains two gages, one giving the gas pressure in the cylinder, and a second used to verify the pressure of the oxygen on the discharge side of the regulator. This regulating equipment will be insisted upon by the safety-first department. Of course the apparatus may be cut to the bone by connecting a 1¼-inch pipe direct to cylinder by air hose. It might be argued that the pressure in the hose and open-ended pipe never could be high, even though the cylinder valve was wide open. But there is always the possibility of an obstruction in the tube, whereupon the pressure behind it would mount up rapidly to that in the cylinder, and the pipe or hose would burst. An oxygen regulator prevents the pressure in the piping becoming more than a predetermined amount by closing and admitting no more oxygen when that valve is reached.

Contrary to ideas commonly held, it is unnecessary to have high oxygen pressure in the lance pipe, 60 pounds per square inch at the regulator being all that is necessary. Therefore

FIG. 1—LANCE BEING USED TO LOOSEN STICKY STOPPER IN AN OPEN-HEARTH LADLE DURING THE TEEMING PROCESS

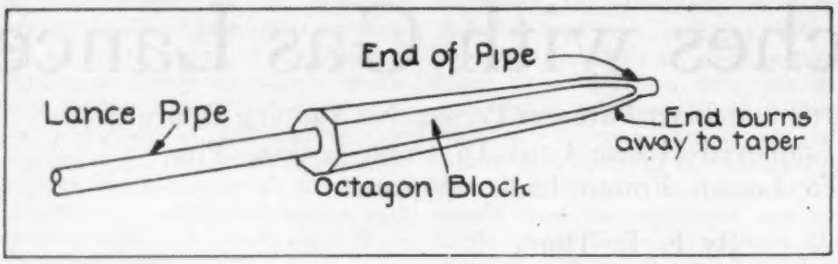


FIG. 2—DIAGRAMMATIC VIEW OF WOODEN SLEEVE USED TO PROTECT THE TIP OF THE LANCE

neglecting to use a pressure regulator introduces unnecessary hazard, wastes oxygen, and increases the labor of cylinder handling. The hose may be safely attached directly to the cylinder only when the pressure has fallen to perhaps 150 pounds, whereupon the last portion of gas can be exhausted through the lance on a tap known to be an "easy" one.

Flexible Hose Is Used

A 30-foot length of ⅜-inch oxygen hose is preferred for the flexible connection. It is much to be preferred to armored hose because should the regulator have been mistreated, allowed to get dirty or out of order, or should the hose be screwed direct to the oxygen tank, and in some such way a bursting pressure arise, rubber air hose will split open without danger to bystanders. Armored hose, on the other hand, fragments badly upon bursting.

Best safety practices frown upon use of air hose on an oxygen lance. It is desirable to sharply distinguish "air" and "oxygen" in the workmen's mind. Serious accidents have occurred due to the belief that the two are interchangeable in usage. Therefore oxygen hose and oxygen fittings always should be used to avoid the possibility that worn or oily pneumatic hose may ever be hooked up to the cylinders in a hurry.

A bent piece of 1-inch pipe used as a handle permits the operator to stand to one side of the runner, well out of range of the sparks coming from the tap hole and he needs no protection other than the customary gloves and goggles. This handle ends in a screwed fitting for ¼-inch lance pipe. In this way, a pipe burned to a stump need not be wasted, but can be screwed out of the handle and on the end of the new length. Pipe wrenches should not be used; a snug fit screwed by hand is tight enough for this purpose, and the joint can be replaced in a few seconds. This pipe should be free from oil because oils and various greases burn spontaneously and violently when struck by pure oxygen. The best way to insure this is to place the new pieces of pipe on the runner just after the tap, and let them get red hot to char and burn all combustibles. Then blow out each piece with clean compressed air. The pipe should have easy-running threads and a sleeve on one end. This equipment can be placed in a handy wall cabinet or mounted on a small two-wheeled truck, such as shown in Fig. 3 and wheeled around the shop wherever it is needed.

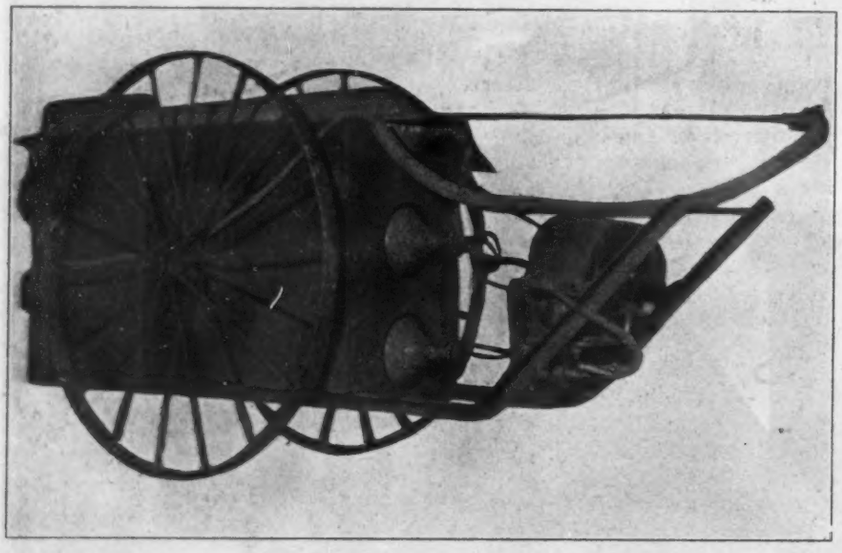


FIG. 3—OXYGEN TRUCK WITH THREE CYLINDERS DESIGNED AND USED FOR LANCE OPERATIONS

Tap hole filling of open-hearth furnaces merely resists the hydraulic pressure of a shallow bath of iron and slag and does not need to be tamped in as solidly nor thickly as blast furnace notches. In fact, a filling of loose dolomite, capped with a ball of clay is all that is used. Furthermore, the hearth of the steel-furnace is much hotter than the blast furnace crucible; the crew has easy access to it and can increase the heat and stir the metal whenever it has a tendency to form a cold bottom. For these reasons a skull of metal seldom chills against the breast of an open-hearth furnace.

Such a combination of circumstances is responsible for the conventional method of tapping a furnace. As the time draws near, a laborer digs out the clay cap and as much of the loose dolomite filling the hole as he thinks is safe. Then when the word is given, the crew thrust a long heavy bar through a wicket in the center door, across the furnace, through the molten slag and metal in the direction of the tap hole. Several vigorous thrusts will drive the remaining partly sintered mass of dolomite and steel out, and a rush of metal follows immediately.

Burning Out Furnace Taps

However, the steelmaking operations are of such a nature that when the heat is finished, it must be tapped immediately to prevent the carbon becoming too low, or the metal becoming over oxidized and "wild". Therefore, if for some reason a lump of dolomite or piece of brick from the banks becomes dislodged and falls into the tap hole, the working from the front of the furnace may drive it tighter. For such contingencies it is desirable to have an oxygen lance ready at the back of the furnace, so an opening can be burned through immediately. On the other hand it more frequently occurs that the tap-hole filling has been dug back a little too far, and the metal itself breaks through before the refining is finished. This equally is disastrous, to the extent of a ruined heat. Such occurrences, though infrequent, are expensive. They can be avoided by the practice of leaving the tap-hole intact until the word "go", scraping out the loose filling and then burning through to metal with an oxygen lance, confident that metal will rush out within one minute, without any exceptions whatever.

This practice has been adopted as standard by one of the large independent steel companies. The in-

surance against run-away heats or plugged tap holes can be had for little or no cash outlay. The cost of oxygen and lance pipe is less than a 2-inch tapping bar which would be melted, twisted and reduced to scrap. The material to be pierced at the notch of an open-hearth is a furnace-wall or fettling, ordinarily a mixture of calcium and magnesium oxides, almost infusible. Intense heat and a flux must be provided, and here again the requirements are provided by burning the end of the oxygen pipe.

When the heat is ready for tapping the end of the lance pipe is thrust into the furnace for a moment and becomes red hot. Just the smallest amount of oxygen passing through causes the pipe end to burn like a Fourth of July sparkler. Burning in this way the lance is placed in the tap hole and the oxygen pressure at the regulator increased periodically on signal, 5 pounds at a time.

Since the hole is driven in an upward direction, the molten slag runs out of itself—it does not need to be blown back by gas pressure. Thus the operator may be close to his work and can watch carefully with no danger of being burned by sparks. Oxygen at low pressure in a small pipe—extra heavy ¼-inch pipe is best—will drill a small hole. It is enlarged by the operator by advancing and retreating the pipe into the hole, or "swabbing" the hole with the pipe end where desired. As the hole gets longer, the oxygen pressure and flow gradually is increased, finally reaching 35 pounds indicated at the regulator. Usually within two minutes a reddish smoke appears at the tap hole, an indication that iron has been reached. Ten seconds later the metal will be flowing freely from the furnace.

Uniform Hole Is Maintained

By working in this manner the tap hole can be kept in the best possible condition. It is driven in the correct direction and of proper diameter. If a heavy rush of oxygen is turned on, the job is done quicker, but requires ten times as much oxygen. This excess oxygen will work in all directions in the furnace banks following along veins of metal and thus honeycombing and loosening the lining about the tap hole. Working under proper conditions, a surprisingly small quantity of oxygen is used. Three heats recently were observed, one of which was expected to be a hard hole. The oxygen consumed was 11, 15, and 16 cubic feet, respectively. Studies at other furnaces indicate that an ample allowance is 40 cubic feet of oxygen and 20 feet of ¼-inch iron pipe per tap. This costs approximately $1.

Another delay, which has lost its terrors to steel men, is a frozen stopper on a steel ladle. Metal is teemed into molds at a temperature fairly close to its solidification point. Therefore it is not unusual to find, whenever there may be delay in handling the steel ladle, or when a large number of small ingots are being cast, that the clay stopper sticks fast into the nozzle. Or if raised, only a thin trickle of iron squirts off at a crazy angle. Unless this can be corrected immediately, a ladle of metal may be scrapped, merely from inability to get it into the molds without admixture of slag. An oxygen lance opens up a frozen hole almost instantly. But for this purpose a slight modification is necessary. Instead of a short handle and a long lance, a long handle and a short lance is preferable. Then the workman can stand 10 feet away, well out of danger of metal splashes. The lance must be short because the ladle is hanging just a few inches above the ingot molds or runner basin. It also has been found practicable to protect this short pipe so it does not burn rapidly. Since the obstruction to be removed is solidified hot metal, the necessary fuel and a stream of pure oxygen is all that is required of the lance.

FIG. 4—OPENING THE TAP HOLE OF AN OPEN-HEARTH FURNACE WITH AN OXYGEN LANCE

Some pieces of hardwood should be cut at the carpenter shop, 1½ inch octagon in outer shape, 12 to 16 inches long, and bored lengthwise for a snug fit over the lance pipe. A thimble of this type is slipped over the end of the lance, as shown in Fig. 4. It will protect the pipe from getting hot and from being scored by the metal and oxide which forms during use. This simple device reduces pipe consumption to a minimum.

A newer application of the oxygen lance than either the opening of furnaces or of steel ladles is with soaking pits. Operators know that the bottom of these pits build up gradually with an accumulation of scale,

dropped from the hot ingots. To remedy this situation, it is customary to drain the pits into a slag cellar, constructed directly below the pits, by breaking through a tile covering a "notch hole" in the floor. A group of workmen takes a long heavy bar, breaks the layer of sticky slag and coke dust forming the pit floor, and attempts to punch through the tile.

On account of the intense heat radiating upward through the partly opened doors, the crew becomes discouraged and abandons work if the slag drain does not open quickly. Accepting the best of a bad job, the pit is then operated until the floor builds up so high that the doors will no longer close over the top of the ingot. Then the whole battery must be cooled for several days, and the entire bottom removed and rebuilt—a most expensive and uncomfortable job.

Lance Adapted to Soaking Pits

Again the oxygen lance is first aid in emergencies. It will open the drain hole leading to the slag cellar with absolute certainty. In fact, standard practice at one of the big mills is now to run until the bottom builds up to the point where the doors will no longer close before attempting to drain the pit. A mass 14 inches thick of gummy iron oxide, together with a tile or brick plug, then is pierced with the lance, and the pit effectively drained. If by any chance the tap hole is entirely closed, or missed, the lance drills on down, through fire brick and bottom plate alike.

To avoid the excessive heat radiating from the pit, a much longer handle is used than for opening furnaces. The lance itself is ⅜-inch triple strong pipe, since the heat of melting through is furnished exclusively by the burning pipe. It must also be covered from end to end with oak thimbles, as described for ladle opening, or it will be necessary to cool the pit somewhat, so the lance pipe will not be heated beyond the kindling temperature throughout its entire length. Oxygen pressure at the regulator increases as the depth of the hole increases; ordinarily 100 pounds will be the maximum. A hole 4 inches in diameter is made by forming a puddle of molten slag, and working the lance around in small circles, advancing gradually. It takes three lengths of pipe and 250 cubic feet of oxygen to do the job, and in 20 minutes the covers are closed, the heat is on, and the slag draining into the cellar. Revision of practice by this simple means is said to net one plant a saving of $1000.00 per pit yearly in repair costs and time.

Union Wage Trend Still Is Upward

An unmistakably strong upward trend of union wage rates is indicated by the annual report covering union scales and hours issued by the bureau of labor statistics. Of the 5038 union scale quotations for May, 1924, 4972 were comparable with quotations for May, 1923. Of these 2491, or practically an even 50 per cent, showed no change, but 2481 had changed in wage rates or hours or both. In 2435 cases hourly wage rates were increased during the year May, 1923, to May, 1924, and there were 98 instances of reductions in regular hours of work per week. On the other hand, there were only 45 cases of reduced hourly wage rates and 13 instances of increased hours per week. These figures are based upon an investigation covering 834,757 members of organized trades and occupations with wage scale data also covering an additional 59,586 union street railway employes. Sixty-six important industrial cities are represented, and the most important groups of strongly organized labor are included, such as the building trades, metal trades and printing and publishing industries.

Composite union hours of work in May, 1924, were 8.5 per cent lower than in May, 1907; 7.2 per cent lower than in May, 1910; 4.6 per cent lower than in 1917; and 0.5 per cent lower than in 1923. This shows the steady drift toward the shorter work week. Composite hourly wage rates showed an increase during the year ending in May, 1924, of 8.3 per cent. They were 99.8 per cent higher than in 1917 and 128.1 per cent higher than in 1913. The latter figure compares closely with the hourly earnings figure for May, 1924, in the National Industrial Conference board's report which shows hourly earnings for that month to be 128 per cent higher than in July, 1914.

Changes in the metal trades ranged from a decrease of 6.4 per cent for blacksmiths' helpers to an increase of 18.1 per cent for machinists' helpers.

Start Razing Old Mill

The boiler house at the old Singer-Nimick mill at Pittsburgh, part of the property of the Crucible Steel Co., on the south side of West Carson street, is being razed, an announcement posted on the building offering the material in it for sale. It could not be learned definitely whether the company intends to raze other mill buildings. The plant has not been operated for more than a year, and the intention of the company to abandon it has been discussed for some time, without official confirmation.

Announce Foundry Awards

Recipients of awards to be made at the Syracuse meeting of the American Foundrymen's association, Oct. 5 to 9, have been announced by the board of directors of the association. Dr. Richard Moldenke has been chosen for the Joseph S. Seaman gold medal, one of the association's four major awards, in recognition of his many contributions to the foundry industry. Dr. Robert J. Anderson, was chosen to receive the W. H. MacFadden gold medal for contributions to the technical sessions.

Seek Code To Prevent Mine Explosions

An important step in the prevention of explosions in coal mines has been taken by the formulation, through the co-operative effort of all interested groups, of a comprehensive code for rock-dusting coal mines, according to an announcement by the American engineering standards committee. Catastrophes due to coal mine explosions can be prevented by the simple expedient of spreading rock-dust thickly enough to cause an incipient coal dust explosion to die out rather than to travel through the mine atmosphere.

The code is now practically completed and it is expected that it will be formally approved and issued in the near future. The code prescribes the rock-dusting of mines producing bituminous coal, or lignite, whether gaseous or not, as they are liable to dust explosions.

The kind of dust to be used is specified as to its nature, fineness and moisture absorbing qualities, since caking destroys its effectiveness. The parts of the mine to be dusted, the methods of applying the dust, and the amounts are indicated.

Opens New Warehouse

The Crucible Steel Co. of America, New York, has opened a warehouse in Hartford, Conn., at 131 Clark street. The building is one-story high, of fireproof construction, 80 x 220 feet. The New Haven branch was formerly at 47 York street. F. J. Dawless is manager. Associated with him are H. A. Scallen and Edward Morrissey.

Editorials

A. S. S. T. Grasps Opportunity

THOSE who attended the meetings and exposition of the American Society for Steel Treating at Cleveland last week undoubtedly were impressed with the size and importance this annual event has attained in the brief seven years of the society's existence. To experienced eyes there was not a thing in evidence at the meeting that would not have done credit to an organization many years older. This amazing rise to maturity is due first to the patent need of a technical society in the field of steel finishing, and second to the able direction of the business affairs of the organization.

What of the future? The society now embraces the entire field from the making of steel to its ultimate use in fabrication. To serve the manifold technical needs and demands of the scores of groups in this wide section of industry is a task far more difficult than that ever attempted by any national organization of this type. It calls for painstaking attention to the needs of the individual, and for machinery for administering this attention effectively to thousands.

The A. S. S. T. owes much of its present strength to its firm grip on its members, doubtless resulting from local chapter contact. The work at hand, therefore, is to enlarge the circle, but without losing the power of this individual contact.

From its past success, the society may be expected to do its full duty in accomplishing this new feat of expansion. The divisions of industry embraced by the society's broader scope of activity are fortunate in having a new clearing house for technical ideas. Industry needs the A. S. S. T., which in turn, seems alert to grasp the opportunity.

It's the Railroads' Turn To Help

THE public long has been accustomed to hearing appeals from the railroads for fair play and a helpful spirit; now the railroads have been asked to practice the Golden Rule and help some of the country's industries. The plea is not one for service or lower rates, but for the railroads to cease manufacturing in their own shops commodities which they need, and which can be supplied to them by recognized manufacturers.

Speaking for the Bolt, Nut and Rivet Manufacturers association, the president of the organization, in this issue of IRON TRADE REVIEW, says the railroads are "competitors" of certain industries, and the competition is largely responsible for depression in those industries. "Why," he asks, "should the railroads, whose business is transportation, continue in manufacturing, long after the reasons assigned for so doing have been removed?" Why should they do it when great manufacturing industries are in a position to serve them adequately and at fair profit?

These industries were built up to present size as a consequence of the war, they suffer from overexpansion, and they need business. The railroads' difficulties also were due to the war; they appealed to the country for co-operation and received it. Now, are they willing to co-operate and do their share to assist manufacturing industries to recuperate?

The appeal is an unusual one, but logical. We can imagine what would be the reply if one industry asked another to abandon a field of activity because its presence there was injurious to the other. The situation with respect to the railroads and manufacturers, however, is not similar. Economical manufacturing methods and reasonable competition among those whose business it is to make and supply the needed products should make it unnecessary for the carriers to engage in "sidelines."

The appeal to the railroads emphasizes the new attitude in business affairs due to changed underlying conditions. It may mark the beginning of inter-industrial co-operation on an enlarged scale, in accordance with sound principles of economics.

Steady Employment the Goal

AS A means of eliminating labor's chief dread —intermittent employment—Secretary of Labor Davis has proposed the repeal of federal legislation restraining industrial combinations and fostering small and frequently inefficient plants. What Mr. Davis said is true, but not new. For more than a decade the economic trend has been toward large, integrated units, resulting in operating efficiency for management and more stable conditions of employment for labor. The coal industry can take a leaf from this. Twenty, or even 10 years ago it would have been suicide for anyone even remotely connected with organized labor to have

spoken so boldly. Today such sentiments are voiced by a union man and a member of the President's cabinet. It is an encouraging sign of a broadening outlook by labor.

Economics Point Debt Terms

MEMBERS of the American debt funding commission are assembling their data and a large amount of information bearing on the French debt question and the ability of France to pay for the purpose of matching wits with the French commission for the approaching conferences in Washington.

Economic conditions alone will light the path leading to the final settlement. The moral obligation involved in the recent Belgian settlement doubtless will be considered.

Some sharp notes on the viewpoint of the United States as to foreign obligations apparently have been sent to some of the foreign chancellories. The difficulty to be experienced by some foreign countries in negotiating much needed loans from American private bankers, unless the prior claim of the United States government first was recognized, undoubtedly had a profound effect in influencing revised viewpoints in foreign governments. The details how the American government paved the way for the present and coming debt negotiations will not be made a part of the public record for a while. Suffice it to say, however, the accomplishment was a notable one. To the minds of many the squaring up of international obligations will do more than anything accomplished in the Coolidge administration to bring about a world stabilization, the Dawes plant not excepted. The firm hand of the United States as regards obligations should strengthen morale not only here but in other countries as well.

August Turns the Tide

FOR the past two years August has marked the turning point in iron and steel production after an extended decline. In 1924 ingot output had been shortened 52 per cent. This year the recovery followed four months of retrenchment in which the total contraction was 27 per cent. This clearly shows the readjustment process in 1925 was much more gentle than in the preceding year, being spread over a longer period and representing a smaller net fluctuation. Doubtless this explains why the recovery in August last year was so sharp or 36 per cent as compared with the 10.9 per cent last month.

The showing in pig iron has some dissimilar points. In August, 1924, the gain was 5 per cent. This year it was 14 per cent. The three months' curtailment in 1924 was 49 per cent. In 1925 it was 41 per cent. This year since March, merchant iron went off 20 per cent while the steelworks total was falling 27½ per cent. Last year the output of the steelworks furnaces was cut in two, or to be exact, 52 per cent, which was the same as in steel ingots, and that of the merchant stacks by 38 per cent before the recovery began.

This tends to illustrate the closer control exercised over production by the steelmakers as against the merchant iron maker. When the former finds the demand running against him, he usually is quick and decisive to adjust his operations accordingly. The same cannot be said of the merchant iron producer. Despite the latter's undoubted propensity for holding off in banking or blowing out hoping that falling melt may change for the better, the limitations of his plant and the conditions of his business tend to afford him less flexibility in his operations.

What Our Readers Are Thinking

Welded Joints Proving Satisfactory

To the Editor:

Some significant, if not revolutionary matters, were touched upon at the steel treaters' convention at Cleveland last week. A paper was read giving the results of a study of joints in the framing of aircraft. Discussion brought out the fact that commercial airplanes are now in quantity production in at least two large American plants, and the standard fusilage construction is a skeleton frame of steel tubing having all the joints welded. Modern Liberty motors have welds in the cylinder jackets designed to withstand 14,500 pounds per square inch. Long use with these designs, and studies of machines which have been wrecked, show that this style of joint has been uniformly satisfactory.

A striking confirmation of these ideas was also to be seen at the exposition. In one booth a welder was constantly engaged in oxwelding high-grade firebox plate into test pieces, which were immedlately ground down smooth to size and pulled in a tension testing machine. With monotonous regularity, the samples broke in the original steel plate, well outside the heated area caused by the welding.

Certainly the word "welding" has come to take on a new meaning. Far from being the erratic product of a blacksmith's forge, modern welding, when given proper managerial attention and under control and inspection, step by step, is able to produce joints uniform and reliable to the last degree. This fact, we think, is worthy of the careful attention of manufacturers and designers of metallic structures. It is bound to have a vital bearing in the economics of construction.

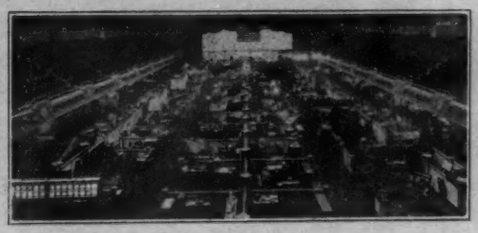
E. E. THUM,
Linde Air Products Co., 30 E. 42nd St., New York.
Sept. 22.

The Readers' Page

Vol. LXXVII, No. 13 IRON TRADE REVIEW Sept. 24, 1925

Next Steel Exposition To Be Even Larger

THE eighth annual convention of the American Society for Steel Treating to be held in Chicago next year undoubtedly will be the occasion of one of the world's greatest expositions of machinery and equipment. No one who attended the convention and exposition in Cleveland last week, and who heard the reports of the president, the secretary and the treasurer of the society could question that prediction. One of the country's largest auditoriums, more than sufficient for the last national Republican convention, and the far largest indoor dramatic spectacle ever staged, was inadequate for all those who desired to exhibit their products. All indications point to an exposition next year on the Chicago Municipal Pier 50 to 75 per cent larger than that in Cleveland, though the Cleveland show occupied 45,000 square feet.



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The Business Trend

Many New Records Promised in 1925

By JOHN W. HILL, Financial Editor

NINETEEN TWENTY-FIVE has been a period of extraordinary activities in many great divisions of industry and finance. Upon the basis of statistical evidence over the first three quarters and prospects for the closing months, it is becoming increasingly clear that this year will bulk above any previous one in numerous important records.

SOME of these records are amazing in their immensity. In finance the historic stock market boom, the huge volume of bank clearings and the gigantic total of business incorporations are of chief interest. In industry, freight movements are without parallel, and construction has moved into a region of vast undertakings.

SO SWEEPING and sustained has been the building boom that many authorities are terming the present period a "construction prosperity." Contract awards for the first eight months exceeded those of the same period of 1924 by 25 per cent. Despite a sharp decline in passenger automobile output in August, reflecting delays incident to inaugurating the new Ford models the aggregate production for the first eight months exceeds that for the period one year ago.

EVEN in the iron and steel industry new records are possible. Ingot production during the first eight months totaled 28,917,000 tons. If the monthly average output over the remainder of the year, exceeds the August production by 10 per cent the year's final result will approximate 44,000,000 tons of ingots, a new peak for all time. In view of current advancing mill operations this seems entirely probable.

CONDITIONS affecting purchasing power in industrial and agricultural centers assure an active autumn in most lines. The movement already is gaining impetus. Of great significance is the gradual developing willingness of buyers to place orders for more extended deliveries. Hand-to-mouth buying no longer is blindly practised.

SOME disturbing signs are seen in labor troubles in the hard coal, building, garment and other industries. In general, however, labor conditions are satisfactory. The slowly increasing firmness of money rates is giving some concern, lest a period of deflation be approaching. This does not seem imminent for business in the months immediately ahead, because of the continued vast credit reservoir in this country.

The Barometer of Business

Industrial Indicators

	August	One Month ago	One Year ago	1913
Pig iron output (Daily average, tons)	87,213	85,966	60,481	83,900
Blast furnace index 60 per cent = normal	49.2	47.5	36.5	62.8
Unfilled orders (tons)	3,512,800	3,539,467	3,289,577	4,513,000
Ingot output (Daily average, tons)	131,694	118,753	98,188	
Dodge Bldg., awards in 27 states (sq. ft.)	77,331,000	67,895,100	41,852,000	31,250,000
Automobile output	250,533	387,333	277,563	
Coal output, tons	44,800,000	39,639,000	35,224,000	39,869,000
Business failures; number	1,513	1,685	1,520	1,336
Business failures; liabilities	$37,158,000	$34,505,191	$55,153,981	$22,732,000
Cement production, bbls.	16,000,000	15,641,000	15,128,000	7,704,000
Cotton consumption; bales	448,665	483,898	357,455	438,218
Car loadings (weekly average	1,073,000	1,016,000	974,418	

Foreign Trade

Exports	$383,000,000	$338,000,000	$330,700,000	$194,000,000
Imports	$375,000,000	$326,000,000	$254,000,000	$149,900,000
Gold exports	$2,135,690	$4,337,842	$2,397,457	$5,234,000
Gold imports	$4,861,736	$10,204,112	$18,149,981	$5,900,000

Foreign Exchange

	Normal	Sept. 21	One Month ago	One Year ago
Sterling	$4.86	$4.84⅞	54.86	$4.46
Francs	19.3c	4.73c	4.68c	5.31c
Lira	19.3c	4.09c	3.67c	4.38c
Marks	23.8c	23.8c	23.8c	

Financial Indicators

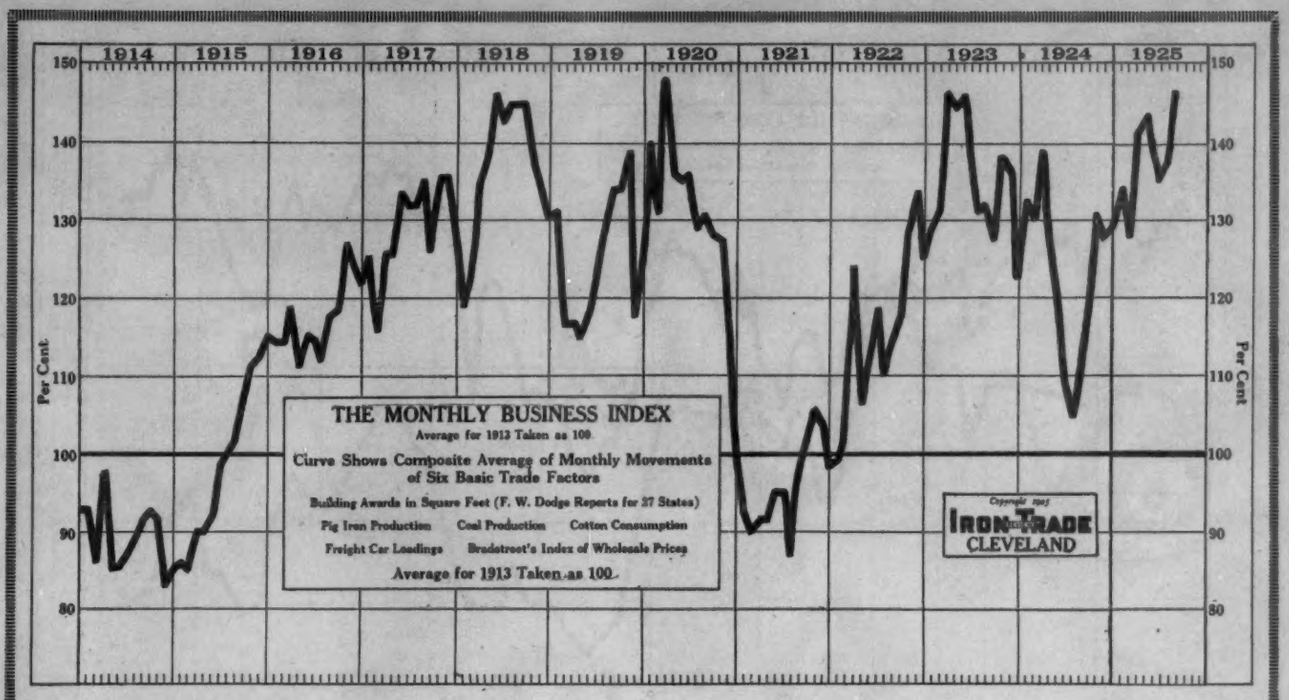
	August	One Month ago	One Year ago	1913
25 Industrial stocks, Sept. 21	$164.69	$159.49	$118.25	$58.10
24 Rail stocks, Sept. 21	$84.85	$84.65	$70.56	$82.50
40 Bonds, Sept. 21	$84.55	$83.25	$80.95	$93.00
Bank clearings (000 omitted)	$37,897,972	$42,879,479	$35,670,039	$13,895,000
Commercial paper rate (N. Y.) per cent	4¼	4	3¼	5.60
Federal reserve ratio, per cent	73.7	75	80.5	
Railroad earnings, July	$99,000,000	$91,716,862	$74,027,000	$59,301,000
Stock sales, N. Y. stock exchange	32,865,127	32,812,000	22,427,305	6,924,000
Bond sales, par value	$217,720,000	$268,000,610	$314,278,000	$41,499,000

*Leading member banks Federal Reserve System.

Commodity Prices

	Sept. 1	One month ago	One year ago	1913
Bureau of Labor Statistics	160.4	159.9	149.7	100
Bradstreet's index	152.3	154.1	138.6	100
Eeconomist's (British)	163.5	163.6	170.2	100
Wheat, cash (Bushel)	$1.52	$1.62	$1.32	32c
Corn, cash (Bushel)	93c	$1.06	$1.07	51c
Petroleum, crude (Bbl.)	$3.15	$3.40	$2.75	$2.50

The Business Trend

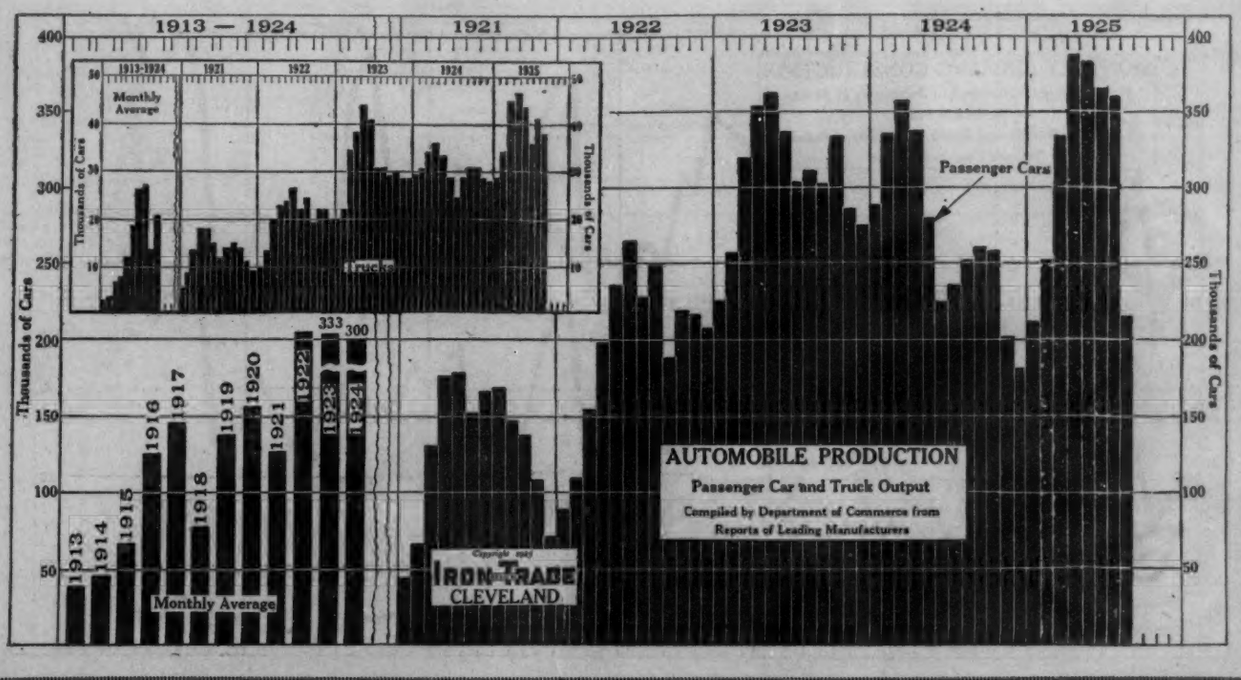


Business Index

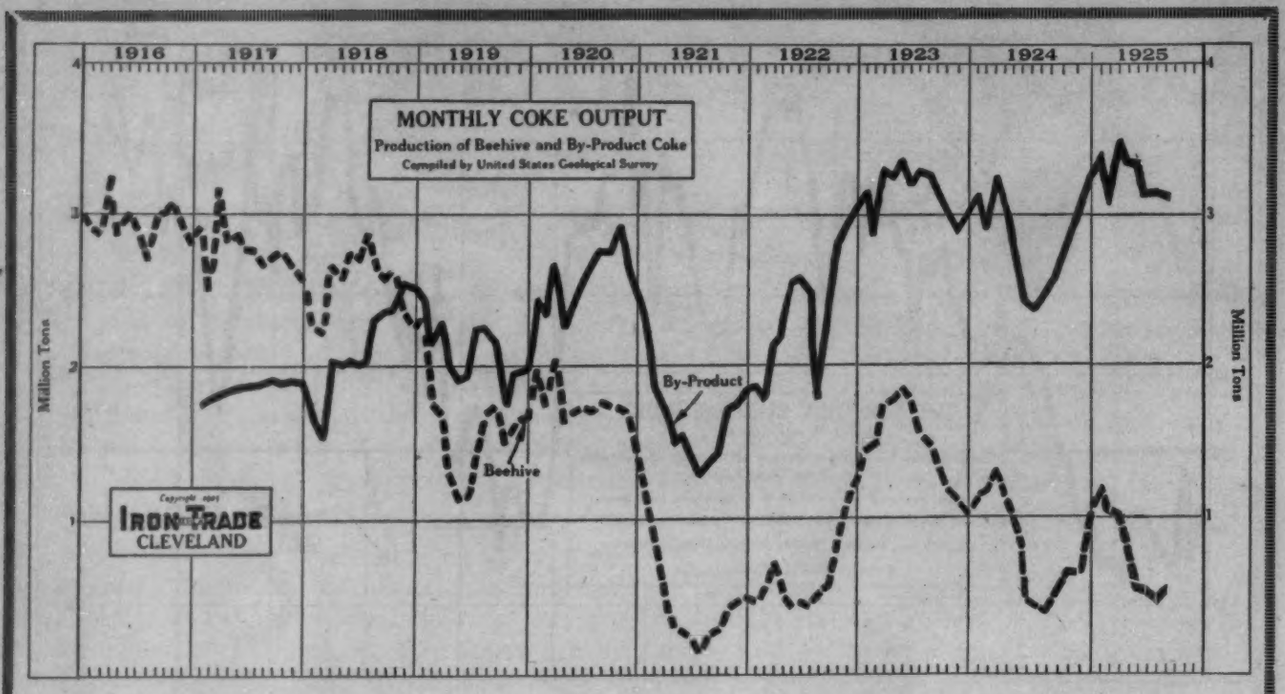
IRON TRADE REVIEW'S Monthly Business Index for August pictures the expansion in activities which has taken place. The index number reached the highest level touched since May, 1923 stood at 146.4 for the month, compared with 138.7 for July and with 109.2 for August, 1924. During the month, there were gains for freight traffic, coal production, building construction and pig iron output. Traffic and building were at new peaks for all time. Coal output was the highest since January.

Automobile Production

AUGUST brought the most severe slump in automobile production of any month since January. The total number of passenger cars and trucks made in this country and in Canada, as reported by the department of commerce, was 259,399. This was a loss of 35 per cent from the July total and one of 8 per cent from that of August, 1924. This drop in output, in the face of continued favorable demand for cars, is explained by the delay in getting into production of the new Ford models.



The Business Trend

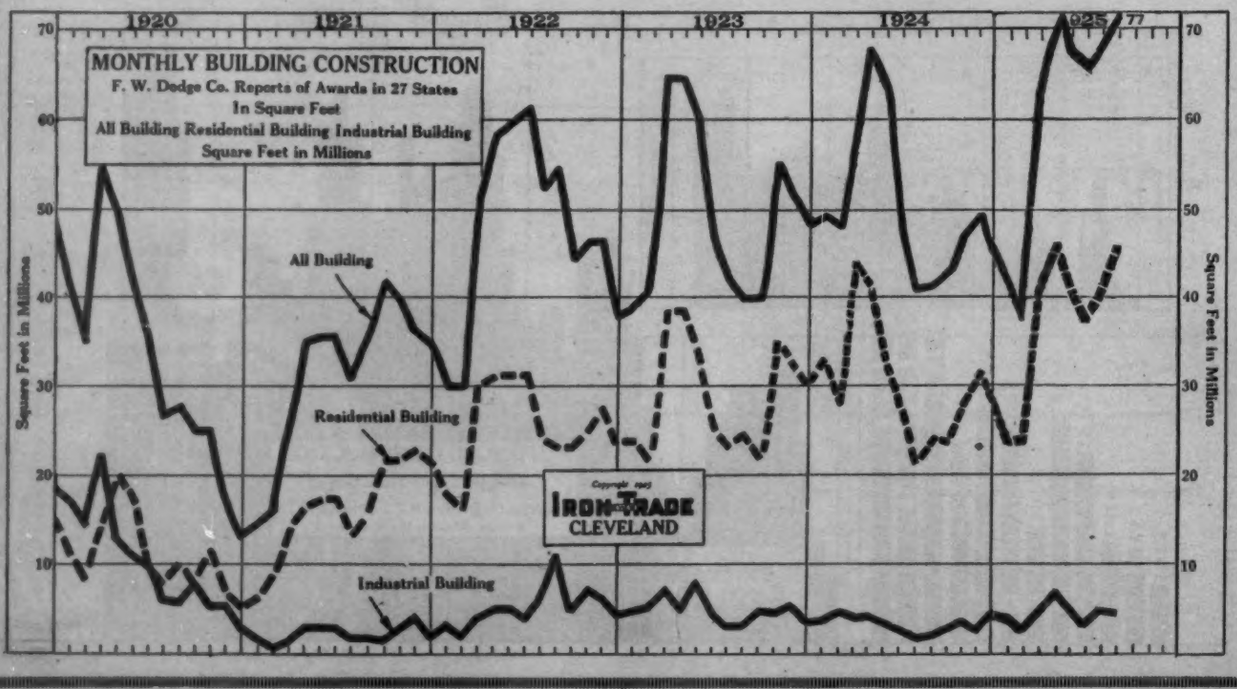


Coke Production

PRODUCTION of by-product coke during August remained virtually stationary. The output was 3,161,000 tons, a decrease of 10,000 tons compared with July. Beehive coke production, however, shows an increase for August, the total for the month being 602,000 net tons compared with 532,000 tons reported for July. The increase amounts to 70,000 tons or 13.3 per cent over that for July. The output of beehive coke was the greatest for any month since last May, when a total of 613,000 tons was reported.

Building

BUILDING construction awards climbed to the topmost peak for all time in August. Total contracts awarded in 27 Northeastern states, reached 77,331,000 square feet. This figure exceeded by 5 per cent the previous high mark which was touched last April. Industrial building increased more than 70 per cent over August, 1924. Residential building gained more than 80 per cent. Building so far this year exceeds that for the same period of 1924 the previous high record by about 25 per cent.



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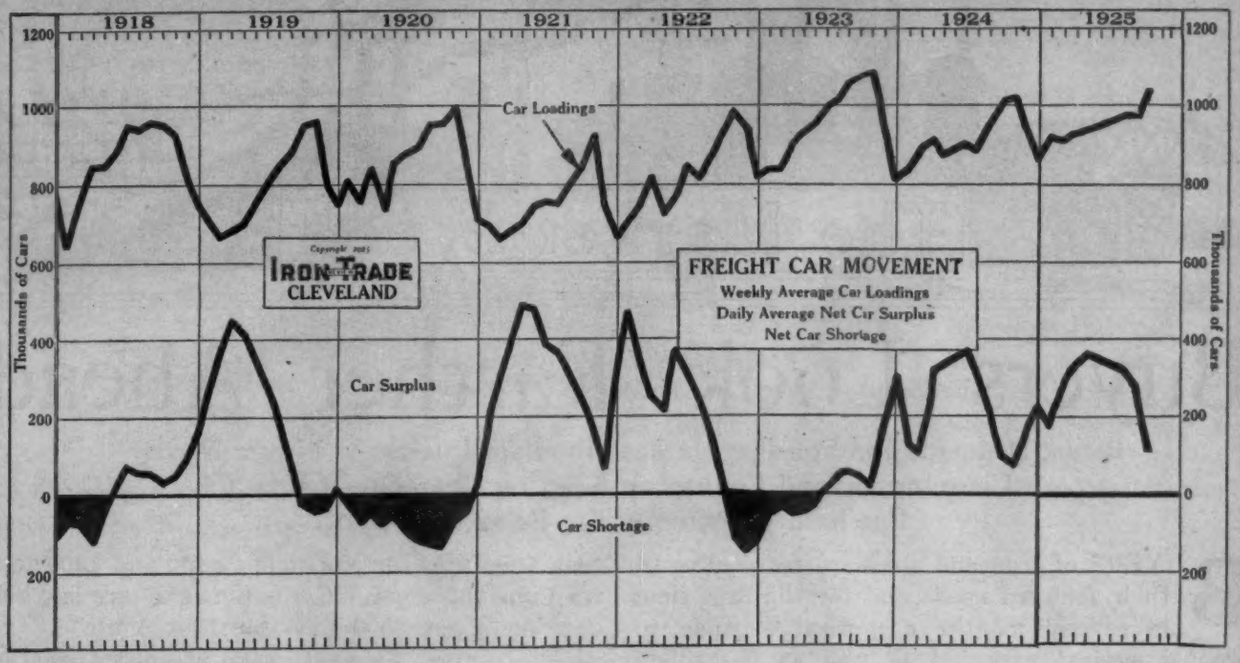
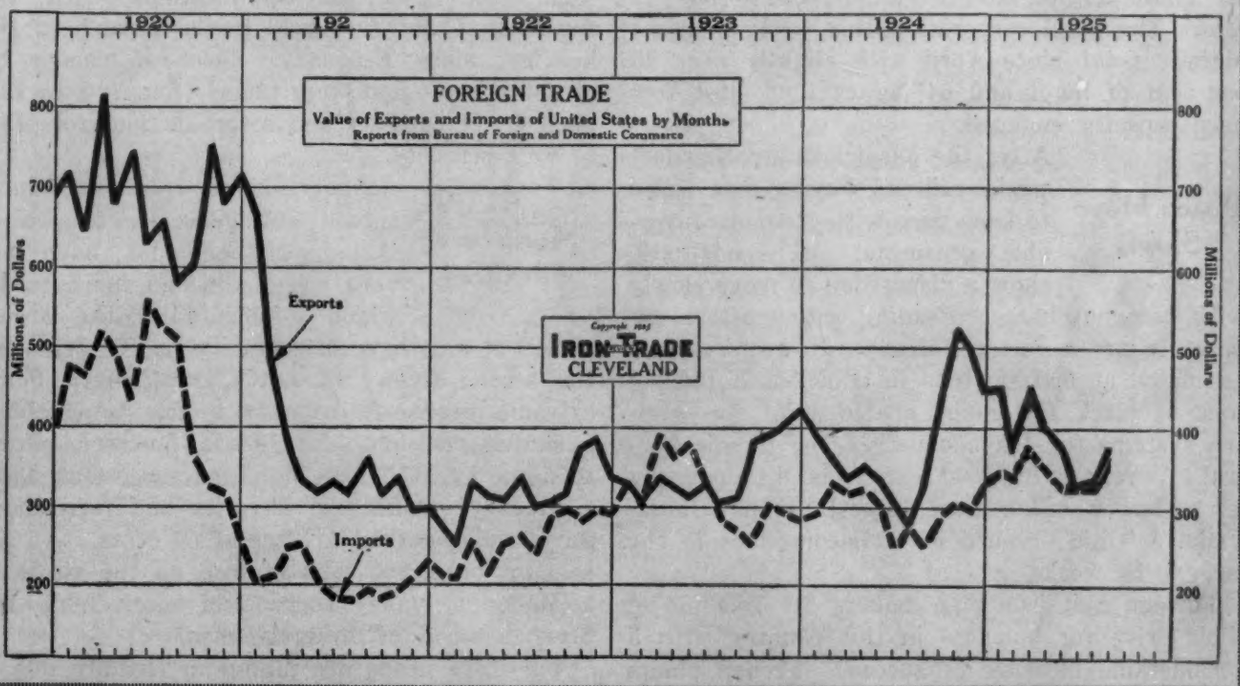


Freight Situation

DURING recent weeks movements of freight have been exceeding all previous records not only for the season but for all seasons. Loadings for August were 11 per cent ahead of those for August, 1924, and 3 per cent ahead of those for August, 1923. With the expansion of traffic, idle equipment has declined sharply and at present the total is about 145,000 cars compared with the peak of about 350,000 cars earlier in the summer. Larger movements of coal and grain have appeared.

Foreign Trade

BOTH exports and imports increased in August. Exports totaled $383,000,000 compared with $338,000,000 in July and with $330,659,000 in August, 1924. Imports during the month were valued at $375,000,000 compared with $326,000,000 in July and with $254,542,000 in August, 1924. The balance of trade in August of $8,000,000 was the smallest for any corresponding month since 1924. August imports were the highest for any month since 1920, with only two preceding exceptions.



Buyers Look Farther Ahead

Rising Demands and Steadier Market Stimulate Interest in Future Needs—Consumption and Production Keep on Upgrade—Railroad Purchases Apparently Are Being Held Back

BUYERS of iron and steel are more alive to their forward needs and for the first time in several months a general attitude to provide against expected as well as immediate requirements is finding favor. Demands are proving greater than previous estimates which, with mill deliveries less prompt and prices steadied, provide more incentive to extend commitments. Formal inquiry from consumers which has been exceedingly limited is reappearing in volume, notably in the Middle West. New tonnage in a number of lines is keeping ahead of shipments and the position of makers with respect to order books is further improved.

The trend of production continues slowly upward and is around 75 per cent at present. Steelworks in the Chicago district are holding on an even keel at 75 to 80 per cent. Mahoning valley sheet output this week jumped to 88 per cent. The Steel corporation this week is at its highest point since April with slightly over 75 per cent of ingot and 64 per cent of blast furnace capacity engaged.

Roads Move Slowly

After the auspicious showing last week, railroad buying has failed to keep pace with its more favorable prospects. All roads still show a disposition to move slowly with new purchases. Pending rate matters apparently are a factor. Heavy rail requirements estimated at 600,000 tons in addition to 150,000 tons of track fastenings are in sight for western systems for 1926 delivery. The Illinois Central's purchase of 1000 cars was disappointing as a larger order was expected. The Chesapeake & Ohio's award of 50 locomotives is the largest in weeks.

Foreign cast iron pipe makers are keeping up their drive for business in this country with a considerable measure of success. French plants took 6000 tons for Norwich, Conn., and 1000 tons for Cuba this week. German makers are low bidders on about 3000 tons for New York.

Adjust Wage Troubles

An outbreak of dissatisfaction over sheet mill wages at McKeesport, Pa., plant of the American Sheet & Tin Plate Co., was short-lived, the men returning this week. The point to which sheet mill wages have lowered by the reduced market prices under the sliding scale agreement remains a source of concern to various employers. Some sporadic labor troubles at independent plants in the Connellsville coke regions have been adjusted with no advances.

A strong demand for full finished sheets from the automobile industry is being felt by the mills and in the Mahoning valley producers have gained some good backlogs. Specifications with the American Sheet & Tin Plate Co. have been the heaviest since February. Sheet shipments by all mills in August were raised from 70.8 to 78.5 per cent of capacity and in production from 75.5 to 87.2 per cent.

More Iron Advances

Advances in pig iron prices have spread out generally this week though further sales have not been large. Chicago furnaces, by which shipments are the largest since the war, have lifted quotations 50 cents for the second time. St. Louis and eastern Pennsylvania producers have been able to establish a similar revision. At Buffalo, however, efforts to discard $18.50 have not been successful. Jackson county makers of silveries and ferrosilicon have made another advance of 50 cents. An unsold lot of 38,000 tons of iron on the yards of a Mahoning valley furnace in receivership has been disposed of to middlemen.

Tin plate needs are piling up steadily due in

part to the unusual size of this season's vegetable pack. One interest has placed 100,000 boxes additional to cover unexpected wants. The mills are running at 85 per cent.

Building steel activity still is showing unusual balance, the week's lettings totaling 35,117 tons. Bookings in August officially announced were 229,100 tons compared with 237,800 tons in July and 252,200 tons in June.

The rise in pig iron prices put IRON TRADE REVIEW composite of 14 leading iron and steel products this week on the higher basis of $37.40. Last week it was $37.35, one month ago $37.45 and three months ago $37.43.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Sept. 16, 1925	Aug. 1925	June 1925	Sept. 1924
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.26	20.76	20.76	21.76
Basic, valley	18.50	18.00	18.15	19.00
Basic, eastern del., eastern Pa.	20.50	20.50	21.50	20.00
*No. 2 foundry, del. Pittsburgh	20.76	20.26	20.16	21.26
No. 2 foundry, Chicago	21.50	20.50	20.25	20.50
*Southern, No. 2, Birmingham	18.50	18.00	19.00	17.65
*Southern Ohio, No. 2 Ironton	19.50	19.40	18.75	20.00
**No. 2X, Virginia furnace	23.00	23.00	23.00	24.50
**No. 2X, eastern, del. Phila.	22.01	21.76	21.51	21.26
Malleable, valley	19.00	18.50	18.50	19.50
Malleable, Chicago	21.50	20.50	20.25	20.50
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	20.26	19.76	19.66	20.76
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	97.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	3.50	3.10	2.80	3.00
Connellsville foundry, ovens	4.25	3.80	3.75	4.00
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	35.00	37.50
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	37.10
Wire rods, Pittsburgh	45.00	45.00	45.25	45.75
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	1.95	2.00	2.05
Steel bars, Chicago	2.10	2.10	2.10	2.05
Steel bars, Philadelphia	2.32	2.27	2.32	2.37
Iron bars, Philadelphia	2.17	2.17	2.22	2.32
Iron bars, Chicago, mill	1.90	1.90	2.05	2.15
Beams, Pittsburgh	1.90	1.95	2.00	2.00
Beams, Philadelphia	2.17	2.17	2.22	2.22
Beams, Chicago	2.10	2.10	2.20	2.10
Tank plates, Pittsburgh	1.80	1.85	1.95	1.95
Tank plates, Philadelphia	2.07	2.12	2.22	1.97
Tank plates, Chicago	2.10	2.10	2.20	2.10
Sheets, black, No. 28, Pittsburgh	3.10	3.15	3.15	3.45
Sheets, blue anl., No. 10, Pittsburgh	2.25	2.30	2.30	2.70
Sheets, galvanized, No. 28, Pittsburgh	4.20	4.20	4.25	4.60
Sheets, black, No. 28, Chicago	3.35	3.35	3.40	3.75
Sheets, blue anl. No. 10, Chicago	2.45	2.45	2.50	2.95
Sheets, galvanized, No. 28, Chicago	4.45	4.40	4.50	4.85
Wire nails, Pittsburgh	2.65	2.65	2.70	2.80
Wire nails, Chicago	2.70	2.70	2.90	3.10
Tin plate per base box, Pittsburgh	5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	18.50	19.25	17.10	18.60
Heavy melting steel, eastern Pa.	17.25	16.50	15.65	17.75
Heavy melting steel, Chicago	16.50	16.05	15.90	16.40
No. 1 wrought, eastern Pa.	18.25	18.25	18.20	18.75
No. 1 wrought, Chicago	16.50	17.45	15.90	16.70
Rails for rolling, Chicago	18.75	19.05	18.15	17.40

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Sept. 23, 1925)	$37.40
Last week (Sept. 16, 1925)	37.35
One month ago (August, 1925)	37.39
Three months ago (June, 1925)	37.60
One year ago (September, 1924)	39.05
Ten years ago (September, 1915)	25.55
Twelve years ago (September, 1913)	25.55

Late News Flashes

Chicago On Even Keel

Chicago, Sept. 22.—For the fourth consecutive week steel ingot operations in this district range from 75 to 80 per cent. Twenty-three of the 35 steel works blast furnace stacks are now active. No change in the operating gait is in sight.

August Structural Bookings Hold Up

Washington, Sept. 22.—Bookings of fabricated structural shapes were computed at 229,100 tons by the department of commerce for August, compared with 237,000 tons in July. Shipments were 247,000 tons in August while those of July were 249,860 tons.

Steel Castings Production Decreases

Washington, Sept. 22.—Production of steel castings in August totaled 51,358 tons, according to reports of the department of commerce. This was at the rate of 51.2 per cent of capacity and compares with 54,474 tons and 54.2 per cent in July.

Corporation Highest Since April

New York, Sept. 22.—The Steel corporation this week is operating its plants at the rate of between 75 and 76 per cent of ingot capacity and at 64 per cent of blast furnace capacity. Last week it operated about 75 per cent of ingot capacity. The largest producer this week is on the highest basis since April.

Valley Sheet Mills Step Up

Youngstown, O., Sept. 22.—Sheet mill rolling schedules advanced to 88 per cent of capacity this week with 75 per cent a week ago, reflecting orders of better volume. Independent steelmakers have 77 per cent of open-hearth capacity engaged while the district schedule is at 75 per cent. Tin and strip mills are working full while pipe mill activity is about 90 per cent.

Another Carnegie Furnace Added

Pittsburgh, Sept. 22.—Another furnace to go on at the Edgar Thomson group of the Carnegie Steel Co. gives that interest 30 out of 56 active. The Claire furnace of the Reliance Coke & Furnace Co. is not yet on but will be making iron in a few days. By-product coke shipments started Sept. 15.

Steelmaking on the part of the Carnegie Steel Co. was on the basis of 73 per cent. The general average for the district is nearer 75 than 70 per cent.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch, base

Pittsburgh, open hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	33.50
Philadelphia	40.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	45.30

SHEET BARS

Pittsburgh	35.00
Youngstown	33.50 to 35.00

SLABS

Pittsburgh	$35.00
Youngstown	33.50 to 35.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00
Cleveland	45.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅝-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	2.07c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.80c to 1.90c
Philadelphia	2.02c to 2.17c
New York	2.04c to 2.19c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	1.95c to 2.05c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.22c to 2.32c
New York, soft steel	2.24c to 2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.05c to 2.15c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	1.90c to 2.00c
Chicago, rail steel	2.00c to 2.10c
Mill, rail steel	1.90c to 2.00c
Philadelphia, common iron	2.12c to 2.22c
New York, common iron	2.14c to 2.24c
Chicago, common iron	1.90c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.40c
Bands, Pittsburgh, 6 inches and under	2.40c
Hot rolled strip steel, Pittsburgh stamping quality	2.20c to 2.40c
Hot rolled strip steel, Chicago	2.40c to 2.50c
Bands, Chicago	2.30c to 2.40c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.75c
Worcester, Mass., Chicago	4.15c

Cold Finished Steel

Cold finished steel bars, drawn or rolled Pittsburgh, Chicago, carloads	2.50c
Less carload	2.75c
Steel shaft'g turned and polished Pittsburgh, Chicago	2.50c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steels

Pittsburgh base

S. A. E. Series—	
2300 (3½ per cent nickel)	4.50c to 4.75c
3100 (nickel chromium)	3.50c to 3.65c
6100 (Chrome vanadium)	4.25c to 4.50c
5100 (Chrome vanad. spring)	4.00c
9260 (Silico mang. spring)	2.25c to 3.40c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar price; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mills	43.00
Relaying rails, St. Louis	28.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill	1.60c to 1.70c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16 inch and smaller, Pitts	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c
Coated nails, count keg	1.85c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts	$20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh base	3.10c to 3.20c
No. 28 Philadelphia, delivered	3.42c to 3.47c
No. 28, Gary, Indiana Harbor	3.30c to 3.35c
No. 28, Chicago, delivered	3.35c to 3.40c

TIN MILL, BLACK

No. 28, Pittsburgh	3.15c to 3.25c
No. 28, Gary base	3.35c to 3.40c

GALVANIZED

No. 28, Pittsburgh base	4.20c to 4.30c
No. 28, Philadelphia, delivered	4.52c
No. 28, Gary, Indiana Harbor	4.40c
No. 28, Chicago, delivered	4.45c

BLUE ANNEALED

No. 10, Pittsburgh base	2.25c to 2.30c
No. 10, Philadelphia, delivered	2.57c to 2.62c
No. 10, Gary, Indiana Harbor	2.40c to 2.45c
No. 10, Chicago, delivered	2.45c to 2.50c

AUTOMOBILE SHEETS

No. 22, Pittsburgh base	4.25c

Tin Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	80	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, f.o.b. mills	2.90c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$53.20 to 54.20
Six-inch and over, Chicago	49.20 to 50.20
Four-inch, Birmingham	45.00 to 46.20
Six-inch and over, Birmingham	41.00 to 42.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60
Standard fittings, Birmingham, base	$110.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅜ x 6", smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4", hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
*Flat and round head stove bolts	80, 10 and 5 off
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off

Rough stud bolts with nuts (250 pieces or more of a size) 40 and 10 off

*Stove bolts 80, 10 and 5 off plus 2½ in bulk

Tie bolts 60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80, 10 and 5 off
Upset	80, 10, 10 and 5 off

SQUARE HEAD SET SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

Rivets

Structural rivets, carloads Pittsburgh and Cleveland	2.40c to 2.50c
Structural rivets, carloads, Chicago	2.60c
**Rivets, 7/16-in. and smaller Pittsburgh and Cleveland	70, 10 and 5 off
**Rivets, 7/16-in. and smaller Chicago	70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chi. dist.	$6.30 to $6.40 off
Wrought, c.l., Pitts. dist.	6.25 off
Lock washers f.o.b. factory	85 off

Pig Iron

Prices Continue on Upward Trend—Good Size Sales Reported—Chicago Orders Are Largest Since the War

ALL developments in the pig iron market point to a stronger price situation. The week's business included considerable tonnage at quotations that were outstanding previous to the recent advance, such as $18.50, valley and $18, Buffalo. The valley minimum now is $19, with some producers holding for $19.50, while Buffalo makers are asking $19, base. More eastern Pennsylvania makers are at $21, base, while Chicago furnaces have advanced again to $21.50. Chicago reports demand from foundries is the greatest since the war. Stocks of iron of the Struthers Furnace Co., Struthers, have been cleaned up with the sale of 38,000 tons to middlemen. Jackson county silveries and bessemer ferrosilicon irons again have advanced 50 cents.

PITTSBURGH, Sept. 22.—The pig iron market is fast changing from buyers' to sellers' hands. This is indicated by a disinclination to quote in some directions, and by higher figures named in others. On an inquiry for 900 tons of No. 2 and No. 2X from the Canton district, one valley producer named $19.50, base. Another valley producer is uninterested in anything below $19.50. Others still name $19, valley, minimum. Sales up to 500 tons at a time are noted at that figure. The Titusville Iron Works is negotiating for 500 tons each of No. 2 and No. 3. It may close today or tomorrow. A tentative inquiry for prices has been received from Westinghouse interests.

Some sellers will name $20, valley, base, for first quarter. Little inquiry is pending for that period. No inquiries or sales of malleable are noted. The valley minimum is $19. Several users of low phosphorus iron have closed for the last quarter at $23.50, Chateaugay, N. Y., taking $5.50 freight rate to Pittsburgh. One purchased 1000 tons for first quarter at a slightly higher figure. A valley producer is naming $27.50 to $28. Small lots of bessemer are moving at $19.50, valley. Basic is firm at $18.50.

Boston, Sept. 22.—Pig iron prices are firmer in New England. The previous levels are obtainable only for round tonnage lots. India iron has been marked up at Boston from $21.50 to $22, f.o.b. cars. Continental iron is available at $21.50. Buffalo iron in small lots is firm at $19, furnace. A sale of 400 tons of Buffalo iron was entered at $18.50 early in the week. Eastern Pennsylvania sales are quiet. One order for 200 tons of No. 2X (2.25 to 2.75 silicon), is reported at $21, eastern Pennsylvania furnace or $24.65, delivered.

Philadelphia, Sept. 22. — Eastern Pennsylvania producers have finally succeeded in advancing foundry iron 50 cents. They sold several thousand tons at $21, base furnace, plus 50 cents for No. 2X and plus 50 cents to $1 for No. 1X. Considerable business also was closed at $20.50, base but this price is disappearing. The advance means little to furnaces because coke is higher. Several thousand tons of basic iron sold at $20.50, furnace. Several small sales of low phosphorus iron aggregating 2000 tons are noted. Prices are unchanged. A Trenton consumer bought several thousand tons of English low phosphorus iron at a reportetd price of $23, duty paid, tidewater.

Pig Iron Prices

Prices per gross tons

Bessemer, valley	$19.50
Bessemer, Pittsburgh	21.26
Basic, valley	18.50
Basic, Pittsburgh	20.26
Basic, Buffalo	18.50 to 19.00
Basic, del., eastern Pa.	20.50 to 21.00
Malleable, valley	19.00
Malleable, Pittsburgh	20.76
Malleable, Cleveland	20.00
Malleable, Chicago	21.50
Malleable, Buffalo	18.50 to 19.00
Malleable, del., eastern Pa.	21.75 to 22.25
No. 1X, eastern del., Phila.	22.26 to 22.76
No. IX, Buffalo	19.50 to 20.00
No. 1 foundry, Chicago	22.50
No. 2 foundry, valley	19.00 to 19.50
No. 2 foundry, Pittsburgh	20.76 to 21.26
No. 2 foundry, Buffalo	18.50 to 19.00
No. 2 foundry, Chicago	21.50
No. 2 foundry, Granite City	22.50 to 23.00
No. 2 foundry, Ironton fur.	19.50 to 20.00
No. 2 foundry, Cleveland, del.	20.00
No. 2 foundry, del., Phila.	21.26 to 21.76
No. 2 foundry, N. J., tidewater	21.89 to 22.39
No. 2X, Eastern del., Phila.	21.76 to 22.26
No. 2X, east. N. J., tidewater	22.39 to 22.89
No. 2X, eastern del., Boston	24.65 to 25.65
No. 2X, foundry, Buffalo fur.	19.00 to 19.50
No. 2X, Buffalo, del., Boston	23.41 to 24.41
Continental foundry f.o.b. Boston	21.50 to 22.00
India iron, f.o.b. Boston	22.00 to 22.50
No. 2 Alabama, Birmingham	18.50 to 19.00
No. 2 Alabama, Cincinnati	22.55 to 23.05
No. 2 Tenn., Birmingham	18.50
No. 2 Tenn., Cincinnati	22.55
No. 2 southern, Philadelphia	24.51 to 25.01
No. 2 southern, Chicago	24.51 to 25.01
No. 2 southern, Chicago (barge and rail)	22.68
No. 2 southern, Boston (rail and water)	25.41 to 25.91
No. 2 southern, Cleveland	24.51 to 25.01
No. 2 southern, St. Louis	23.67 to 24.17
No. 2X, Virginia furnace	22.50 to 23.50
No. 2X, Virginia, Phila.	27.67 to 28.67
No. 2X, Virginia, Jersey City	28.04 to 29.04
No. 2X, Virginia, Boston	28.42 to 29.42
Gray forge, eastern Pa.	21.00 to 21.50
Gray forge, val. del. Pitts	20.26
Low phos., standard, valley	27.50 to 28.00
Low phos., standard, Phila.	26.79
Low phos., Lebanon, furnace	23.50 to 24.50
*Low phos., English, Phila.	24.01
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $24.00; 6 per cent $25.00; 7 per cent $26.00; 8 per cent $27.00; 9 per cent $28.50; 10 per cent $30.50; 11 per cent $32.50; 12 per cent $34.50; 13 per cent $36.50; and 14 per cent $38.50.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $32.50; 11 per cent $34.50; 12 per cent $36.50; 13 per cent $38.50; 14 per cent $40.50; 15 per cent $43.00; 16 per cent $45.50; 17 per cent $48.00.

*Duty paid.

Buffalo, Sept. 22.—While open inquiry for pig iron amounts to 6000 to 7000 tons, negotiations have been pending within the past week for fully 15,000 and perhaps 20,000 tons. The disposition of all sellers except those with steel companies is to quote $19 on all but very exceptional tonnage and to seek differentials on all business. On fourth and first quarter business prices are firm at $19, base, with full differentials.

Cleveland, Sept. 22.—While pig iron sales are smaller in tonnage than in recent weeks, higher prices are applying on most bookings. Some makers had quotations of $18.50, valley, outstanding, and about half the business closed by one seller during the week was on that basis. On newly negotiated sales $19, valley, applied. The strength of the valley market so far has not led local furnaces to advance from $19.50, furnace, for Cleveland delivery, the reason being given that there are more opportunities for making sales in this district at present. Cleveland foundries, however, are fairly well covered for fourth quarter. Inquiries from Cleveland castings makers this week aggregate 5000 tons. One lake furnace is continuing to quote $20 to $20.50, while another in the Detroit district maintains $21. Good sales have been made at these figures.

Sales closed in this district by one producer of low phosphorus iron total 3000 tons. Some British low phosphorus has been sold into this district at $20, seaboard.

Cincinnati, Sept. 22.—Another advance of 50 cents a ton in the price schedules of bessemer ferrosilicons and silveries, together with corresponding increases in Alabama and Tennessee pig iron prices, are the outstanding features in the market. Silveries now are $1 a ton higher than ten days ago. Alabama foundry iron is quoted $18.50 to $19, Birmingham, while Tennessee iron is quoted $18.50 by the only furnace interest in blast. Northern foundry iron is firm at $19.50 to $20, Ironton base. Sales for the week aggregated close to 10,000 tons and involved, southern, charcoal and northern foundry. The Williamson Heater Co., Cincinnati, closed for 1000 tons of northern and 500 tons of southern for last quarter. A leading seller reports the sale of 1000 tons of southern to a Louisville, Ky., melter, and

two lots of charcoal iron 600 and 300 tons, respectively to melters in the Pittsburgh district. The Cadillac

Chicago, Sept. 22.—The melt of northern iron is such that few users have more than a 30-day supply on their yards and demand upon the furnaces is the greatest since the war. Many melters are finding they have under-estimated their requirements and sales continue heavy despite the large tonnage placed last month. If car buying develops and foundries specializing on that class of work become greater market factors, another stack may be blown in. Reflecting the coal situation, northern No. 2 foundry and malleable iron have been advanced to $21.50, Chicago furnace, and No. 1 foundry to $22. These prices govern for spot and last quarter business. Inquiry for the first quarter is increasing, but producers are discouraging it and business taken is not large. A Milwaukee malleable foundry placed 1000 tons for the fourth quarter, while sales of 300 to 500 tons of both foundry and malleable are numerous. A Milwaukee melter placed 500 tons of low phosphorus iron. Charcoal iron is unchanged at $26, furnace, or $29.04, Chicago. The delivered Chicago range on southern barge-and-rail iron is $23.18 to $23.68.

St. Louis, Sept. 22.—Pig iron shows increasing strength, though purchasing is restricted among users of foundry grades. Steelmakers are exhibiting more interest in supplies, there being several important inquiries, and heavier sales than in a long while. A leading east side melter took 10,000 tons of basic for last quarter from the St. Louis Coke & Iron Co. Another steelmaker purchased 6000 tons of basic for the balance of the year.

Birmingham, Ala., Sept. 21.—Southern furnace interests are maintaining firmly a price of $19.50 for No. 2 foundry iron for fourth quarter. While practically all business is of a spot character, on which $19 is the price, shipments exceed the make. The Republic Iron & Steel Co. will repair within six weeks the blast furnace blown out last week. The Sloss-Shef-

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Ferroalloys

Over 2000 Tons of Spiegel Sold—Ferro Transactions Limited

New York, Sept. 22.—An order for several hundred tons of English ferromanganese placed by the Otis Steel Co. was the leading transaction of the week. Otherwise orders have been small. The price is firm at $115 duty paid tidewater for imported. More than 2000 tons of spiegeleisen was sold largely to one customer for forward shipment. A number of carloads also were closed. The price is firm at $33, furnace, for 20 per cent for ordinary quantities but this can be shaded on large lots.

Special ferroalloys are in a quiet market with prices unchanged but with shipments on contracts going ahead on schedule.

Pittsburgh, Sept. 22.—Meager sales and a slow inquiry rate appear in ferroalloys. Largely market activity is confined to shipments against contracts. One seller of English ferromanganese has authority to take a limited amount of business for delivery in the first quarter of year at the present figure, $115 c.i.f. Atlantic seaboard. The Follansbee Bros. Co. is in the market for a carload of 10 per cent ferrosilicon. One seller of the material made in a blast furnace, who has been quoting $35.65, Pittsburgh, has lost business in a number of cases recently. Spiegeleisen is inactive, except for contract shipments. Prices are unchanged.

Chicago, Sept. 22.—A Chicago user has closed on 100 tons of spiegeleisen at $32, furnace, or $39.76, delivered Chicago. Foreign ferromanganese is quoted at $115, seaboard, with rumors current that an advance is impending.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.79
Spiegeleisen 19 to 21 per cent per domestic furnace or tidewater	33.00
Ferrosilicon, 50 per cent contract freight allowed	82.50 to 85.00
Ferroutngsten standard, cents per pound contained	1.10 to 1.15
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 3.90
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	$91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent material)	$122.50

†Duty paid

Coke

Upward Trend in Coke Prices Less Pronounced—Ovens Going In—Labor Difficulties Settled

THE advance in Connellsville coke prices appears to have been retarded for the present. More ovens have resumed operations and are quoting $3.50 to $3.65 on spot tonnage. Some contracting has been done for fourth quarter below $4. On standard foundry grades $4.25 still is available. Demand is less active. Labor difficulties are being settled satisfactorily.

Pittsburgh, Sept. 22.—Buying of beehive furnace coke is somewhat retarded. Additional purchases by a local steelworks interest are expected. It is understood it closed for a portion of its last quarter requirements below $4. One operator which a month ago took a block for first quarter at $4, later establishing that price as minimum, claims not to have accepted any spot standard coke orders below $4.

Other producers becoming active have quoted $3.50 and $3.65. These figures still are available in the spot market this week. With the market trend toward higher levels some eastern demand for coke as a substitute for anthracite has shrunk, but is expected to resume within a month or so. Labor difficulties in the Star Junction district gradually are being ironed out. One operation still is idle; another reports men are drifting back. There is no disposition of operators anywhere to grant higher wages. They claim there is no justification at present. Inquiries for medium sulphur coke in 10 to 50 carloads are more numerous. Around $3.50 is quoted. Foundry grades are not so active and $4.25 still is available. Some makers are quoting $4.50 and higher. Premium brands are $5.

Production of coke in the Connellsville region for the week ended Sept. 12 was 118,350 tons, compared with 109,600 tons the preceding week, according to the *Connellsville Courier*.

Boston, Sept. 22.—Shipments of foundry coke continue heavy. Both New England by-product coke plants are running close to capacity. Prices are firm at $12, delivered, with rumors of an early advance. Domestic coke is selling at $14, delivered.

New York, Sept. 22.—Foundry coke is less buoyant than a week ago. While demand for domestic fuel is good, new foundry demand is small. Spot beehive foundry is $4.50 to $5, Connellsville, depending on the brand. By-product foundry is $10.41, delivered at Newark and other northern New Jersey points.

Birmingham, Ala., Sept. 21.—A better feeling is noted in the coke market. Demand has improved and quotations have been advanced 25 cents. One hundred and three beehive ovens at Majestic still are idle because of drouth.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.50 to 4.00
Connellsville, foundry	4.25 to 4.75
New River foundry	7.50 to 8.00
Wise county furnace	3.75 to 4.25
Wise county foundry	4.50 to 5.25
Alabama foundry	4.75 to 5.00
Alabama furnace	4.00 to 4.50

By-Product

Foundry, Newark, N. J.; del.	$10.41
Foundry, Chicago, ovens	9.75
Foundry, New England, del.	12.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	9.50
Foundry, Birmingham	4.75 to 5.00

Plates

Railroad Demand Larger, Features Market—Price Softness Noted in Eastern Sales

DEMAND for car plates is more in evidence in an otherwise quiet market. Pittsburgh mill interests estimate car orders placed recently or pending call for 250,000 tons of plates. Automobile cars awarded at Chicago call for 10,000 tons of plates and shapes. For B. & O. car repairs from 10,000 to 15,000 tons of steel is being inquired for.

PLATE PRICES, PAGE 762

Philadelphia, Sept. 22.—Plate prices are slightly weaker. Several sales are noted at 1.75c, Pittsburgh. The market is 1.75c to 1.85c. Demand is maintained at the same daily average as in August.

Boston, Sept. 22.—The plate market continues sluggish in New England. Prices are soft. One hundred tons went to a Worcester, Mass., manufacturer at 1.80c, Pittsburgh. Fourth quarter contracts are being entered slowly.

Pittsburgh, Sept. 22.—Recently placed railroad car business is becoming the mainstay of the plate market, and mills are accumulating backlogs. One or two already are quoting five to seven week deliveries. It is estimated that car orders recently placed or pending involve a total of 250,000 tons of plates. The larger portion of this tonnage doubtless will come to Pittsburgh district mills. While some car builders say they will be able to purchase plates below 1.80c, 1.80c to 1.90c are quoted in this market, although 1.70c is understood to be available in certain sections of the East.

Cincinnati, Sept. 22.—The Louisville & Nashville railroad has bought 300 tons of plates for last quarter. The business was placed with the Tennessee Coal, Iron & Railroad Co. The Big Four railroad is in the market for 500 tons of plates for last quarter.

Chicago, Sept. 22.—The 1000 automobile cars placed by the Illinois Central railroad with local car builders brings 10,000 tons of plates and shapes to the leading maker. This interest also has booked 3000 tons for miscellaneous car work. New oil storage tank inquiry totals 2000 tons. A pipe line at Detroit calls for 2600 tons. As in other heavy finished lines, inquiry is decidedly improved. Plates are quoted at 2.10c, Chicago.

Cleveland, Sept. 22.—Inquiries are current for 10,000 to 15,000 tons of steel for an unstated number of car repairs to be made by the Baltimore & Ohio railroad. Large plate requirements are not numerous but the run of small and medium sized lots keeps up well. Where buyers are contracting, it invariably is proving that they have underestimated their needs and each new job taken brings out a fresh inquiry. One contract for fourth quarter for 600 tons in this territory is reported was closed at 1.90c, Pittsburgh for the plates and 2.00c, for the shapes. However, the common price of the market remains 1.80c, Pittsburgh or 1.99c, Cleveland.

New York, Sept. 22.—Plates are somewhat easier. The current market on usual tonnages is 1.75c to 1.80c, Pittsburgh, with 1.70c on some exceptional lots. Several large tonnage have been placed and some are pending.

CONTRACTS PLACED

150 tons, sheet piling for Esquimale, B. C., to United States Steel Products Co.
1500 tons, 7 tanks for the Pan American Petroleum Co., New York, to the Riter-Conley Co.

CONTRACTS PENDING

80,000 tons, pipe line project, Oakland, Calif.; action postponed until Sept. 25.
300 tons, Gates for South San Joaquin Irrigation district, Manteca, Calif; bids in.
300 tons, pipe line for Sutherlin, Oreg.; bids in.
300 tons, tank tower for Potter Valley Water district, Portland, Oreg.; bids in Sept. 25.
650 tons, six barges for the United States engineers, St. Louis; Dravo Contracting Co., Pittsburgh, low bidder.
1000 tons, barges for federal engineer, St. Louis; pending.
2600 tons, pipe line at Detroit; pending.
1500 tons, oil storage tanks at San Pedro, Calif.; pending.

Semifinished

Market Displays More Firmness—Some Consumers Negotiating for Fourth Quarter

RECENT developments in the market for sheet bars, billets and slabs have served to emphasize strength of present prices rather than weakness. Some Pittsburgh district mills are seeking to advance the quotation of $35 that has applied on all three products. Negotiations are more active, and some fourth quarter requirements have been covered.

SEMIFINISHED STEEL PRICES, PAGE 762

Youngstown, O., Sept. 22.—No particular concern is shown by consumers of sheet bars or other semifinished material in arranging for fourth quarter requirements. Many sheet bar users continue to buy material to cover current sheet rollings on a hand-to-mouth basis. Orders for this commodity are received from week to week by makers who are quoting $35, Youngstown, on either grade. No sale of slabs or large billets have been made here recently. The quotation of $33.50, Youngstown, continues to apply. On small billets, $35, Youngstown, is minimum.

Philadelphia, Sept. 22.—Some inquiry for billets for fourth quarter are pending, but sales are small.

The New York Central railroad is in the market for 300 tons of forging billets for fourtht quarter.

Pittsburgh, Sept. 22.—It has not been possible for any of the buyers of semifinished material in this territory to purchase at below $35, Pittsburgh. One large strip maker has 28,000 tons of billets and slabs on hand but has been endeavoring to purchase more at a lower figure, without success. Producers not only are standing firm at $35, Pittsburgh, but are indicating an early advance of $1 to $2.50. One or two blocks of business, 500 to 1000 tons, have been taken and one buyer planning to consume 2000 tons of high manganese small billets annually has been purchasing in varied quantities. The seller of this last material is charging $1.50 extra for size and $1.50 extra for manganese, or $38 base. A few small forging billet orders come through each week at $40.

Sheet bar buyers likewise are indicating higher figures than the $35 price, which appears to be firm here. Specifications are increasing slightly and one or two lots for last quarter shipment have been placed. It is understood the Carnegie Steel Co. is taking up this week with its regular customers the matter of their fourth quarter sheet bar requirements.

Shipments against $45 wire rod contracts are keeping up at a good rate, with specifications coming in freely. Little or no new business is being done.

Cleveland, Sept. 22.—More tonnage of sheet bars, billets and slabs are being figured here than in some time, though buyers are objecting to paying $35, Cleveland, or Youngstown, as quoted by the leading producer. This interest is holding firmly to the price, though some valley mills are offering billets and slabs at $33.50. Most of the fourth quarter output of the leading mill here has been covered for regular customers at trade paper quotations. It is operating practically full.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	13.00 to 14.00
Boston (dealers)	11.50 to 12.50
Buffalo	18.00 to 18.50
Chicago	16.00 to 16.50
Cincinnati (dealers)	14.00 to 14.50
Cleveland	17.25 to 17.75
Detroit	14.50 to 15.50
Eastern Pennsylvania	17.00 to 17.50
Bethlehem delivery	17.00
New York (dealers)	12.50 to 13.00
Pittsburgh	18.50 to 19.00
St. Louis	15.50 to 16.00
Valleys	17.75 to 18.00

COMPRESSED SHEETS

Buffalo	15.50 to 16.00
Chicago	14.00 to 14.50
Cleveland	15.00 to 15.50
Detroit	12.50 to 13.00
Pittsburgh	17.00 to 17.50
Valleys	16.75 to 17.25

BUNDLED SHEETS

Buffalo	14.50 to 15.00
Cincinnati (dealers)	11.00 to 11.50
Cleveland	12.50 to 12.75
Eastern Pennsylvania	14.50
Pittsburgh	16.00 to 16.50
St. Louis	10.50 to 11.00
Valleys	14.75 to 15.25

SHEET CLIPPINGS, LOOSE

Chicago	9.00 to 9.50
Cincinnati	11.00 to 11.50
Detroit	9.50 to 10.00

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Buffalo	17.75 to 18.25
Chicago	20.50 to 21.00
Cincinnati (dealers)	17.00 to 18.00
Cleveland (over 6 ft.)	16.25 to 16.50
Detroit	17.00 to 17.50
St. Louis	18.50 to 19.00

STOVE PLATE

Birmingham	13.00 to 14.00
Boston (consumers)	14.00 to 14.50
Buffalo	15.00 to 15.50
Chicago	16.25 to 16.75
Cincinnati (dealers)	11.00 to 11.50
Cleveland	13.50 to 13.75
Detroit (net tons)	13.25 to 13.75
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	20.00 to 20.50
Cincinnati (dealers)	15.00 to 15.50
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	23.00 to 23.50

SHOVELING STEEL

Chicago	15.75 to 16.25
Pittsburgh	13.00 to 13.50
St. Louis	15.25 to 15.75

KNUCKLES, COUPLERS, SPRINGS

Chicago	19.00 to 19.50
Eastern Pennsylvania	20.50 to 21.00
Pittsburgh	20.50 to 21.00
St. Louis	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	17.50 to 18.00
Eastern Pennsylvania	17.00 to 17.50
St. Louis	17.50 to 18.00

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	19.50 to 20.00
St. Louis	17.00 to 17.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	12.00 to 13.00
Boston (dealers)	13.50 to 14.00
Buffalo, No. 1	15.75 to 16.25
Buffalo, No. 2	17.50 to 18.00
Chicago, No. 1	16.50 to 17.00
Chicago, No. 2	16.00 to 16.50
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cleveland, No. 1	13.00 to 13.50
Eastern Pennsylvania	18.00 to 18.50
New York, No. 1 (dealers)	15.50 to 16.00
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	18.50 to 19.00
St. Louis, No. 1	14.50 to 15.00
St. Louis, No. 2	15.25 to 15.75

WROUGHT PIPE

Boston (dealers)	12.00 to 12.50
Buffalo	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	13.00 to 13.50

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 18.00

BUSHELING

Buffalo	16.00 to 16.50
Chicago, No. 1	14.00 to 14.50
Chicago, No. 2	9.75 to 10.25
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cleveland, No. 1	14.00 to 14.25
Cleveland, No. 2	13.75 to 14.00
Eastern Pennsylvania	14.00 to 15.00
Pittsburgh, No. 1	15.50 to 16.00
St. Louis, No. 1	14.00 to 14.50

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston (chemical)	9.00 to 9.50
Buffalo	12.00 to 12.50
Chicago	9.25 to 9.75
Cincinnati (dealers)	10.50 to 11.00
Cleveland	13.50 to 13.75
Detroit	10.50 to 11.00
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	9.75 to 10.25
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50
Valleys	13.25 to 13.50

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	7.00 to 8.00
Boston (chemical)	11.50 to 12.00
Boston (dealers)	9.00 to 9.50
Buffalo	12.25 to 12.75
Chicago	12.75 to 13.25
Cincinnati (dealers)	10.50 to 11.00
Cleveland	14.00 to 14.25
Detroit	10.75 to 11.25
Eastern Pennsylvania	15.00
Eastern Pennsylvania (chem.)	16.00 to 16.50
New York (dealers)	9.75 to 10.25
Pittsburgh	14.50 to 15.00
St. Louis	12.50 to 13.00
Valleys	14.50 to 14.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.50 to 9.00
Buffalo	12.00 to 12.50
Cincinnati (dealers)	10.50 to 11.00
Cleveland	14.25 to 14.50
Detroit	10.75 to 11.25
Eastern Pennsylvania	12.00 to 13.50
New York (dealers)	9.75 to 10.25
Pittsburgh	13.00 to 13.50

PIPES AND FLUES

Chicago	13.00 to 13.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	11.75 to 12.00
St. Louis	12.50 to 13.00

RAILROAD GRATE BARS

Buffalo	14.50 to 14.75
Chicago	16.75 to 17.25
Cleveland	13.50 to 13.75
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.50 to 12.00
St. Louis	14.00 to 14.50

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Buffalo	14.50 to 15.00
Chicago	11.50 to 12.00
Cleveland (under 10 in.)	13.75 to 14.00
Cleveland (over 10 in.)	13.00 to 13.25
Detroit	10.75 to 11.25
Pittsburgh	12.50 to 13.00

FORGE SCRAP

Boston (dealers)	10.50 to 11.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	23.75 to 24.25
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.50 to 10.00
Buffalo	15.00 to 15.50
Chicago	14.00 to 14.50
Cleveland	15.50 to 16.00
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	17.00 to 17.50
St. Louis	13.00 to 13.50

STEEL CAR AXLES

Birmingham	18.00 to 20.00
Boston (shipping point)	17.50 to 18.00
Buffalo	20.00 to 20.50
Chicago	20.00 to 20.50
Cleveland	17.00 to 17.25
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	21.50 to 22.00
St. Louis	19.50 to 20.00

SHAFTING

Boston (shipping point)	18.50 to 19.00
Chicago	20.50 to 21.00
Eastern Pennsylvania	23.00 to 24.00
New York (dealers)	18.00 to 19.00
St. Louis	17.50 to 18.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	15.00 to 16.00
Boston (consumers)	17.50 to 18.00
Buffalo, iron	15.50 to 16.00
Buffalo, steel	18.00 to 18.50
Chicago, iron	17.50 to 18.00
Chicago, steel	19.00 to 19.50
Cincinnati	13.50 to 14.00
Eastern Pennsylvania	18.50 to 19.00
New York iron (dealers)	14.00 to 15.00
Pittsburgh, iron	17.00 to 17.50
Pittsburgh, steel	20.50 to 21.00
St. Louis, iron	17.50 to 18.00
St. Louis, steel	19.00 to 19.50

NO. 1 CAST SCRAP

Birmingham, cupola	16.00 to 17.00
Boston	19.00 to 19.50
Buffalo	17.00 to 17.50
Chicago, No. 1 machinery	19.75 to 20.25
Chicago No. 1 railroad or agricultural	18.75 to 19.25
Cincinnati No. 1 Machinery cupola (net tons dealers)	19.00 to 19.50
Cleveland, cupola	18.00 to 18.50
Detroit (net tons)	15.00 to 15.50
Eastern Pennsylvania, cupola	18.50 to 19.00
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.50 to 18.00
San Francisco, delivered	20.00 to 21.00
Seattle	18.00
St. Louis, railroad	18.50 to 19.00
St. Louis, agricultural	18.50 to 19.00
St. Louis, machinery	19.50 to 20.00
Valleys	18.00 to 18.50

HEAVY CAST

Boston	15.50 to 16.00
Buffalo (breakable)	15.00 to 15.50
Cleveland	12.25 to 12.75
Detroit (automobile) (net tons)	20.00 to 20.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	14.50 to 15.00
Pittsburgh	15.50 to 16.00

MALLEABLE

Boston, railroad	18.50 to 19.25
Buffalo	19.00 to 19.50
Chicago, agricultural	16.75 to 17.25
Chicago, railroad	18.00 to 18.50
Cincinnati, railroad (dealers)	14.00 to 14.50
Cincinnati, agricultural (dealers)	15.50 to 16.00
Cleveland, agricultural	18.00 to 18.50
Cleveland, railroad	18.75 to 19.25
Detroit	15.50 to 16.00
Eastern Pennsylvania, railroad	17.50 to 18.00
Pittsburgh, railroad	19.00 to 19.50
St. Louis, agricultural	14.50 to 15.00
St. Louis, railroad	16.50 to 17.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	15.00 to 16.00
Boston (dealers)	12.50 to 13.00
Buffalo	17.50 to 18.00
Chicago	18.75 to 19.25
Cleveland	16.50 to 16.75
Eastern Pennsylvania	18.00 to 18.50
New York	15.50 to 16.00
Pittsburgh district	20.00 to 20.50
St. Louis	19.50 to 20.00

LOCOMOTIVE TIRES

Chicago, No. 1	18.50 to 18.50
Chicago, cut	20.00 to 20.50
St. Louis, No. 1	16.50 to 17.00

LOW PHOSPHORUS PUNCHINGS

Chicago	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	20.50 to 21.00

Scrap

Uncertain Trend Develops and Some Prices Yield—Consumers Buy Little

CONSUMERS of iron and steel scrap, for the moment, at least have turned a deaf ear to offerings and buying for the future is light. At Chicago embargoes have been laid in at least two cases where mill yards are congested and prices are off 50 cents. At New York some advance has been made, while most other centers are stationary or weaker.

Chicago, Sept. 22.—Uncertainty concerning the trend of iron and steel scrap prices has become intensified and an average of 50 cents a ton has been lost by practically all grades. Dealers are confronted with a buyers' strike and unsettled conditions in the eastern markets. The course of scrap in the valleys will largely determine the market here over the next few weeks. Heavy melting steel is unchanged at $16 to $16.50. Two of large independent melters have become congested with receipts and are embargoed. Malleable and foundry grades have declined 50 cents and even these prices are not attractive to melters. Bearish sentiment continues to predominate and most dealers are taking losses in placing material coming out to them.

Boston, Sept. 22.—Demand for iron and steel scrap is spotty, but sales are above normal for this time of year. A feeling of uncertainty prevails. Pennsylvania steel works are less anxious for heavy melting scrap. Mixed borings and turnings have sold in New York and Connecticut at $9 shipping point. A Worcester, Mass., consumer took several cars of heavy melting steel at $15 delivered.

New York, Sept. 22.—The iron and steel scrap market is featured by an increase of 50 cents a ton on borings and turnings, and 25 cents on turnings. There has also been a slight increase in the price of clean cast borings. Buying generally continues dull, although some new orders for heavy melting steel are being placed for shipment to Claymont, Del., and Coatesville, Pa., at $17, delivered and for wrought pipe for shipment to Lebanon, Pa., at $17, delivered. The general tone of the market remains strong.

Philadelphia, Sept. 22.—Buying of iron and steel scrap is small and prices are unchanged from previous levels, consumers having little interest in the market.

Buffalo, Sept. 22.—No major inquiry for scrap is reported and outside demand is weaker but prices show little change. Scrap is in firm hands and dealers' confidence is not reduced. Turnings and borings are fractionally lower and some buyers are taking no shipments on old orders.

Pittsburgh, Sept. 22.—With the Midland, Pa., users holding up shipments of scrap on order, and with the Monessen, Pa., and other consumers at nearby points out of the market, the 70 to 75 per cent steel mill schedules at these points mean little to the scrap seller. Orders are for small miscellaneous lots at bargain prices.

Cleveland, Sept. 22.—Iron and steel scrap continues to move slowly in this district, transactions being confined in large degree to dealers. Even these embody small tonnages. Consumers are taking shipments with regularity and the melt is heavy. Early buying of importance is expected in consequence. Prices are unchanged but inclined to weakness.

Cincinnati, Sept. 22.—Inactivity of demand and weakness of prices characterizes the iron and steel scrap market here. The market at present is in a weaker position than for months. Consumers turn a deaf ear to offerings, contending that they have more material on hand than their requirements demand. Dealers are endeavoring to force sales to relieve congestion in their yards.

Detroit, Sept. 22.—Activity in iron and steel scrap is lessened. Some consumers have ordered dealers to hold up shipments. Only small tonnages are moving and these at attractive prices. Local consumers are buying small lots but are keeping in close touch with the market.

St. Louis, Sept. 21.—Except in heavy melting steel, the scrap iron and steel market is dull, lower and featureless. Melters take only immediate needs in small lots. The reason for the relative strength and activity in heavy melting steel is the recent purchase by a leading East side user of about 10,000 tons. Other steelmakers are out of the market. Railroad lists include 3850 tons by the Santa Fe, 2500 tons by the Frisco and seven cars by the Missouri Pacific.

Birmingham, Ala., Sept. 21.—Good demand exists for iron and steel scrap but quotations have advanced little, the principal grades remaining the same as for several weeks.

Sheets

More Active Demand Noted From Various Sources—Motor-car Builders Placing Orders

LARGE orders and specifications for sheets for automobile manufacture are the outstanding feature of the market this week. Prices show little change, minimum quotations for early shipment by valley mills being 4.20c on galvanized, 3.10c on black and 2.25c on blue annealed. Some makers refuse to contract at these prices.

SHEET PRICES, PAGE 762

Youngstown, O., Sept. 22.—A buying movement in the high-grade sheet market is in progress and is lending encouragement to producers in the Mahoning valley. Producers of this grade are anticipating good conservative business. Quotations are firm at 4.25c, Pittsburgh.

In the common sheet market an 88 per cent operation is being maintained this week in the district, and new business is being received in keeping with this rate. Eastern consumers are covering at present prices. Black sheets are being quoted at 3.15c, although in certain districts producers are compelled to meet a price of 3.10c. Producers are naming 2.30c on blue annealed, but are compelled to recognize 2.25c on desirable orders. This grade, however, displays more firmness than black. While 4.30c was named recently on galvanized in carload quantities, a large portion of the going business is being taken at 4.20c. The latter price applies on tonnage for immediate shipment only.

Boston, Sept. 22.—Sheets have failed to recover as expected at Boston and black sheets have sold at 3.05c, Pittsburgh. One mill holding at 4.20c for galvanized sheets is losing orders.

Philadelphia, Sept. 22.—Sheet buying and specifications are good, but large new tonnages are lacking.

The New York Central railroad is in the market for 300 tons of black sheets for fourth quarter.

Buffalo, Sept. 22.—Sheet sellers have advanced the price of galvanized to around 4.30c although recent bookings may have been made at slightly lower levels. Black sheets are quoted at 4.20c or better. September operation has been good and October bookings are growing steadily.

Chicago, Sept. 22.—Although western sheetmakers have not formally opened their fourth quarter books they are steadily taking business for October delivery and considering November and December inquiry on an individual basis. Price and not tonnage is the cause of present dissatisfaction. Valley competition is less

pronounced and realization prices are better. Mill operation probably averages 80 per cent, with more favorable weather at hand. The market is 4.45c, Chicago, on galvanized, 3.35c to 3.40c on black and 2.45c to 2.50c on blue annealed.

Pittsburgh, Sept. 22.—Fair size lots of sheets have been involved in each of the numerous specifications received by producers in this and nearby districts in the past week. These specifications have covered almost everything made in the sheet line, all manufacturing lines where sheets are utilized being active. Outstanding demands still are noted for automobile sheets. Body builders and parts makers are placing attractive orders and in each case the material is wanted rushed. Agricultural implements, stoves, household hardware, parts of buildings, etc., are calling for large sheet tonnages. For the American Sheet & Tin Plate Co., last week's specifications totaled the largest of any week since last February. Some export orders likewise are being received. It is operating on approximately a 70 per cent basis, notwithstanding its slight interruption last week at one of its plants due to a misunderstanding concerning the wage rate adjustment. The men were ready to return to work last Friday but were not allowed to do so until Monday of this week. Sheet prices still are slow about assuming the strength they should have in view of recently announced advances. Some sellers still are being governed by minimum figures although others are making a sincere effort to obtain the higher prices which they claim are low enough in view of production costs.

Tin Plate

New Business Developing—Users Placing Specifications Early

TIN PLATE PRICES, PAGE 762

Pittsburgh, Sept. 22.—Conditions in the tin plate trade still are satisfactory. New business is developing from unexpected sources. Some of the canmakers are anticipating needs for early next year, and some specifications have been received in the past week for production and shipment any time between now and Dec. 31. One new order from a can maker calls for 100,000 base boxes and is attributed to the increased demands for cans from Wisconsin where the pea packers are starting on their third pack of the year. Ordinarily they have two packs annually. Between now and Jan. 1 arrangements are to be made to send to tin plate makers specifications for shipments early next year, and the same relatively high rate of operation is expected to be maintained throughout the remainder of 1925. The average at present is 85 per cent. Some new business is developing abroad as well as in the domestic market and two recent orders for export involved 50,000 and 70,000 base boxes, respectively. The price still is $5.50.

Strip Steel

Better Bookings and Prices Are Firm —Operations Increase

STRIP PRICES, PAGE 762

Pittsburgh, Sept. 22.—Highly diversified bookings of hot and cold strip steel are on the increase. Buyers are sending orders from all parts of the country and while delivery has been exceptionally good, in some cases it is being deferred. Operation has increased slightly above 75 per cent. The 3.75c figure is absolutely firm on cold strips and more talk is heard of an advance. Hot strips are unchanged at 2.20c and there are no deviations.

New York, Sept. 22.—Conditions in cold-rolled strip steel are greatly improved. Buying during the past week included not only the usual run of business, but a number of large orders, for nearby and fourth quarter. The 3.75c base Pittsburgh price is firmer. Some of the largest orders during the past week have been placed at the full price.

Pipe

Line Pipe Orders Absent—French Maker Takes Tonnage —Germany Low in New York

FOREIGN competition on American cast iron pipe tonnages again is being felt. B. Nicoll & Co., New York representative of a French maker, took 6000 tons in Connecticut and 1000 tons in Cuba. A German maker is low on about half of 6000 tons for New York municipality. General buying is declining. Pipe mill operations continue 75 to 90 per cent.

PIPE PRICES, PAGE 762 AND 802

Pittsburgh, Sept. 22.—In the absence of large lots of line pipe, oil country goods orders are more miscellaneous in character but a sufficient number of these still are developing to help the independent mills to maintain their practically full operating rates. The National Tube Co. has been averaging below 75 per cent, while the independent group is averaging between 85 and 90 per cent. Deliveries on lapweld pipe are two or more weeks deferred but more prompt shipments can be had on buttweld. Fair sized lots of standard full weight merchant pipe are being ordered by jobbers but in most cases they have accumulated fair sized stocks. It now looks as if the gas line for Kentucky to be installed by the Petroleum Exploration Co., Sistersville, W. Va., 57 miles of 8-inch, will not be placed because of difficulty in getting the pipe line laid before winter.

New York, Sept. 22.—On the lot of more than 6000 tons of cast pipe for the local department of water supply, gas and electricity, a German company, the Gelsenkirchener Bergwerke was low on two sections involving 1550 and 1410 tons respectively; the United States Cast Iron Pipe & Foundry Co., on another calling for 1465 tons and John Fox & Co., on 1440 tons. The German bids were $4 to $5 a ton higher than those submitted on a previous tonnage for this department, and in practically all instances where straight pipe was involved, the competition was keen. On the lot of 1410 tons the German bid was $52.03 and the next low bid, which was put in by the Warren Foundry & Pipe Co., $52.06. On the section involving 1440 tons, John Fox & Co. bid $52 and the German company $52.23. No award has yet been made.

B. Nicoll & Co., representing a French maker, have been awarded 6000 tons of 24-inch pipe by Norwich, Conn. This company has booked also within the past week 1000 tons of water pipe for Cuba, and 1000 tons of miscellaneous gas pipe business, placed by domestic users. B. Nicoll & Co. did not bid on the New York City tonange.

New York Central railroad is in the market for 20,000 boiler tubes covering its fourth quarter requirements.

Chicago, Sept. 22.—The seasonal decline in cast iron pipe buying has set in but is less marked than in some previous years. Municipal buying for the year is almost over but private buying continues good. Pressure for delivery continues a feature. Prices range from $41 to $42, Birmingham, or $49.20 to $50.20, Chicago, for pipe 6 inches and larger, with a $4 differential on 4-inch pipe.

Birmingham, Ala., Sept. 21.—Cast iron pressure pipe shops in this section are going at capacity with shipments equaling output. Winter buying, which started six weeks ago, is proving up to expectations. Quotations maintain the recent advance of from $1 to $2 on pipe.

CONTRACTS PLACED

6000 tons, 24-inch water pipe, Norwich, Conn., to B. Nicoll & Co., representing a French maker.

1000 tons, water pipe for Cuba, to B. Nicoll & Co.

371 tons 16-inch pipe for Los Angeles, Spec. 776-A to United States Cast Iron Pipe & Foundry Co.

311 tons, 4 and 6-inch standard black pipe for San Jose Water Co., San Jose, Calif., to

Mark Lally Co.
150 tons, Waukegan, Ill., to United States Cast Iron Pipe & Foundry Co.
175 tons, Fond du Lac, Wis., to National Cast Iron Pipe Co.

CONTRACTS PENDING

6000 tons, approximately, for the department of water supply, gas and electricity, New York; Gelsenkirchener Bergwerke, a German maker, low on two sections, the United States Cast Iron Pipe & Foundry Co., low on another and John Fox & Co., on still another.
388 tons, North Sacramento, Calif., 10-inch class B; general contract let to Chambers & DeGolyer.
243 tons, 4 and 6-inch pipe for Compton, Calif.; general contract let to Fisher & McCall.
100 tons, 4 and 6-inch class B for San Diego, Calif.; general contract let to H. H. Peterson.
170 tons, Compton, Calif., 10-inch pipe, general contract let to V. Kovacevich.
100 tons, La Grande, Oreg.; sewage disposal plant; general contract let to Hartenbower Bros.
744 tons, 6 to 10-inch class B pipe for Needles, Calif.; Claude Fisher low on general contract.
100 tons, 4 and 6-inch class B pipe for El Cerrito, Calif; bids in.
115 tons, La Grange, Ill.; bids Sept. 21.
300 tons, Evansville, Ind.; bids Sept. 21.

Bolts, Nuts, Rivets

Fall Market Strengthening and Final Quarter Promises Much

NUT AND BOLT PRICES, PAGE 762

Chicago, Sept. 22.—The market on bolts and nuts is coming back much more rapidly than a year ago and the outlook is that fourth quarter will be be much better than the final quarter of 1924. Both contracting and specifications are good. Western plants are operating at about 70 per cent. Tire bolts have been reduced from 50, 10 and 5 off to 60 and 5 off. Large rivets are quoted 2.60c, Chicago.

New York, Sept. 22.—One of the largest bolt and nut orders since the war just has been placed here. It involves about 250 tons of large bolts and nuts, in four sizes, to be used in the construction of the new boardwalk at Rockaway Beach. The order went to the Pittsburgh Screw & Bolt Co.

While the structural erectors continue to buy rivets heavily, there is continued lack of business from shipbuilders, and rivet makers are unable to increase operations above 40 per cent. Rivet prices continue 2.40 to 2.60c base Pittsburgh and in some especially attractive cases 2.40c Pittsburgh is shaded slightly.

Pittsburgh, Sept. 22.—Fairly substantial orders are being received by makers of nuts and bolts, and in some cases the same is true of rivets. Two or three rivet shops have been unable to accumulate business and have remained down. Most orders are direct from consumers. Specifications against fourth quarter contracts are beginning to come in fairly good volume and additional contracts are being booked.

Bars

Market Broadening and Demand Is Increasing — Most Prices Firmer

ALL classes of steel bar users are buying this product and in the West a decided increase in demand is apparent, buyers formerly taking only spot lots now manifesting interest in forward requirements. In the East easy prices have firmed and purchases at lower levels are not so easy to make as formerly. Some inquiry for fourth quarter is coming out occasionally.

BAR PRICES, PAGE 762

Chicago, Sept. 22.—Inquiry for soft steel bars has taken a decided spurt and in the week ended last Saturday was at a level exceeded in only two week so far this year. For a number of weeks inquiry has been light, most consumers buying material as needed. Now the tendency is to put out inquiries for fair tonnages and to indicate a disposition to buy further ahead. Bar business is coming from all classes of consumers and the trend is distinctly upward. The market is firm, in the immediate Chicago district, at 2.10c, Chicago.

The B. F. Avery & Sons, Louisville, Ky., have bought 700 tons of agricultural bars for last quarter shipment.

Rail steel bars tend more to the level of soft steel bars, although on building bars the market is suffering from keen competition. The building industry is the largest outlet for rail steel. Bar iron, however, continues under a cloud and may not emerge until the railroads are better buyers. Bar iron ranges from 1.90c to 2.00c, Chicago.

Boston, Sept. 22.—Steel bar sales at Boston are active and prices are exceptionally firm at 2.00c, Pittsburgh. Total sales to date in September are not only far above the same period in 1924 but are above the average for the similar period in all months in 1925.

Philadelphia, Sept. 22.—While steel bars still are obtainable in large tonnages at 1.90c, Pittsburgh, this figure is tending to disappear and the usual price is 2.00c, Pittsburgh. There is some inquiry for fourth quarter. Iron bars are 2.12c to 2.22c, delivered Philadelphia.

Buffalo, Sept. 22.—Bar demand shows some improvement this week. Some mills have accumulated fair backlogs of business and may have quoted 2.165c, Buffalo, to bring about this condition although the nominal minimum price here is 2.265c. Orders are slightly larger.

Pittsburgh, Sept. 22. — Merchant steel bar backlogs are growing and this easily is the most active of heavier rolled steel products. On some of the popular sizes and shapes, deliveries are five or more weeks deferred but on other sizes deliveries can be had in two or three weeks. One inquiry is out here for 2200 tons of assorted sizes and kinds and so far as can be learned 2.00c is the minimum price quoted. Sales during the past week or two involving up to 200 tons at a time have likewise carried 2.00c, and apparently that is now the minimum. More refined iron bar orders are coming out and makers are busier. Railroad business is developing. Prices are firm at 3.00c to 4.50c.

New York, Sept. 22.—An inquiry for 1500 tons of steel bars along with shapes and plates has been issued by the New York Central railroad covering its fourth quarter requirements.

Cleveland, Sept. 22.—Consumers of steel bars and related finished steel lines are more desirous of closing contracts covering their fourth quarter requirements. A number of tonnages of this kind have been closed on which the price uniformly has been 2.00c, Pittsburgh or 2.19c, Cleveland. More often than not, consumers in making recent purchases have underestimated their requirements and they are being forced into the market constantly for supplemental lots.

Cold Finished Steel

Conditions Seem Better Than During Summer Months

COLD FINISHED PRICES, PAGE 762

Pittsburgh, Sept. 22.—Conditions gradually are bettering themselves in cold-finished bar. More contracts are being placed and specifying is more active. Practically all consuming lines are furnishing their share and the outlook is perhaps brighter than at any time all summer. The price is still firm at 2.50c. Operations are between 60 and 70 per cent.

Hoops and Bands

Makers Operating Full to Meet Demand at Firm Prices

HOOP PRICES, PAGE 762

Pittsburgh, Sept. 22.—Rolling mills producing hot flats in hoop and band sizes are working day and night to keep abreast of the demand. Automotive buying still is heavy and other consuming lines are taking larger tonnages. The minimum price is firm at 2.40c with relatively higher figures applying on narrow and thin material.

Structural Shapes

Volume of Work Unusually Heavy—Orders Being Placed Freely—Inquiries Indicate Continued Activity

AN UNUSUALLY heavy volume of structural tonnage is being figured. Orders and inquiries continue in large quantities. American Bridge Co. took 8000 tons for the Statler hotel, Boston, which has been under contemplation for the past several years. New York subways took 5700 tons. Pending work includes 6700 tons for a bridge in Pittsburgh and 2000 tons for a high school there. Demand for small lots of shapes also continues high.

Plain material prices continue spotty, Philadelphia mills still quoting as low as 1.80c and interests in other districts attempting to firm the price to 2.00c, Pittsburgh. Fabricating prices have stiffened, New York having a $2 to $3 a ton advance and Boston a $5 increase.

STRUCTURAL SHAPE PRICES, PAGE 762

New York, Sept. 22.—Structural orders continue to come out freely, with a lot of 8000 tons for the Statler hotel, Boston, predominating. In fact, more interest is being shown by buyers than in many weeks. Fabricating shops, their positions now improved, are quoting stronger prices, approximately $2 to $3 higher than a month ago. The plain material market is unchanged around 1.90c, Pittsburgh.

Boston, Sept. 22.—The eastern structural market is unusually active. The American Bridge Co. took 8000 tons for the Statler hotel at Boston and other New England contracts of the past week total over 6000 tons. Fabricating prices have advanced fully $5 a ton during the week. Plain material sales in September not including specified jobs already exceed the August total. Plain material ranges from 1.90c to 1.95c Pittsburgh.

Buffalo, Sept. 22.—Demand for small structural shapes is considerably improved. Mill service has been affected to some extent by the increase in orders and future bookings are believed to be larger than at any time this quarter. Buffalo quotations on plain material are 2.265c, delivered.

Philadelphia, Sept. 22.—An unusually competitive shape market causes plain material prices to range from 1.80c to 2.00c, Pittsburgh, and 2.00c to 2.10c, eastern mill with lower being done on especially attractive cases.

Pittsburgh, Sept. 22.—Several small structural jobs are out and bids on 6700 tons for the Point bridge and 2000 tons for a high school are being taken. Prices are unchanged at 1.90c to 2.00c, with a leaning toward the maximum figure.

Cleveland, Sept. 22.—Inquiry for structural material is active but awards slow. One mill recently booked 600 tons of plates and shapes for fourth quarter delivery, the shapes going at 2.00c, Pittsburgh. Mills believe an attempt will be made to stabilize fourth quarter prices at 2.00c and consequently are not opening their books, with 1.90c still being quoted.

Chicago, Sept. 22.—Pending structural work is unusually heavy for late September but fabricating shop capacity here is so large that competition continues sharp. Plain material is unchanged at 2.10c, Chicago.

Cincinnati, Sept. 22.—Awards involving small tonnages continue to predominate in the local structural market. Prices on plain material still are 2.00c, Pittsburgh.

Awards Compared

	Tons
Awards this week	35,117
Awards last week	33,555
Awards two weeks ago	15,801
Awards this week in 1924	21,684
Average weekly awards, Aug.	30,786
Average weekly awards, 1925	32,506

CONTRACTS PLACED

8000 tons, Statler hotel, Boston, awarded through Dwight P. Robinson & Co. Inc., 61 Broadway, New York, to the American Bridge Co.

5700 tons, subway section, New York, awarded through Frederick L. Cranford, Inc. 149 Remson street, Brooklyn, general contractor, to the American Bridge Co.

2100 tons, 15-story apartment, West Seventy-second street, New York, to Taylor-Fichter Steel Construction Co.

1900 tons, repairs to roadway on Manhattan bridge, New York, to the McClintic-Marshall Co.

1600 tons, loft, 268 West Thirty-ninth street, New York, to the McClintic-Marshall Co.

1500 tons, power plant addition for Detroit Edison Co., Trenton, Mich., to Jones & Laughlin Steel Corp.

1350 tons, Latham Square building, Sixteenth and Telegraph avenue, Oakland, Calif., to Judson Mfg. Co.

1200 tons, press shop addition, Hudson Motor Car Co., Detroit, to Massillon Bridge & Structural Co.

1000 tons, building for Calaweres Cement Co., Calaweres, Calif., to Minneapolis Steel & Machinery Co.

950 tons, miscellaneous buildings for Phelps Dodge Co., Douglas, Ariz., to McClintic-Marshall Co. of California.

850 tons, J. H. Taylor apartment, Central Park west and Ninety-second street, New York, to Bethlehem Fabricators, Inc.

600 tons, office building, White Plains, N. Y., to Hay Foundry & Iron Works.

600 tons, Minskoff building, Fifth avenue and Ninety-fourth street, New York, to Harris Structural Steel Co.

600 tons, additional power plant for Southern California Edison Co., Long Beach, Calif., to Llewellyn Iron Works.

500 tons, Knickerbocker hospital, New York, to an independent fabricator.

450 tons, State theater, Youngstown, O., to unknown fabricator.

400 tons, building, 1061 Lexington avenue, New York, to A. E. Norton, Inc.

400 tons, central fire station, Boston, to Boston Bridge Works, Inc.

400 tons, canopies for the Boston & Albany station, Springfield, Mass., to the Boston Bridge Works.

350 tons, plant at Hillsville, Pa., for Lake Erie Limestone Co., Youngstown, to Bollinger-Andrews Construction Co.

340 tons bridgework for Big Four railroad to McClintic-Marshall Co. and Bethlehem Steel Co.

300 tons, Salvation army building, Youngstown, O., to Morgan Engineering Co., formerly announced as award involving 150 tons.

300 tons, Rice-Adams Corp., Buffalo, N. Y., to Fort Pitt Bridge Works.

300 tons, bank, Painesville, O., to Forest City Structural Steel Co., formerly announced as award involving 1⅛6 tons.

300 tons, Stockyards Exchange bank, Chicago, to A. Bolters' Sons Co.

300 tons, theater, Avenue A, New York, to Post & McCord.

800 tons, New York Central railroad building at Youngstown, O., to the Walsh Construction Co., Davenport, Iowa, and Chicago.

260 tons, additional for Carthay Center theater, Los Angeles, to Llewellyn Iron Works.

250 tons, synagogue, West Ninety-fifth street, New York, to Harris Structural Steel Co.

240 tons, garage for Milwaukee Electric Railway & Light Co., Milwaukee, to Worden-Allen Co.

200 tons, garage, Mount Airy, Pa., to Richard DeCou Co.

200 tons, building for the Marble Head Lime Co., South Chicago, Ill., Worden-Allen Co.

200 tons, New York state highway bridge, to the McClintic-Marshall Co.

200 tons, building for the United States Metals Refining Co., Carteret, N. J., to the Pittsburgh Bridge Works.

200 tons, building for S. S. Kresge Co., at Zanesville, O., to Reliance Steel & Construction Co.

190 tons, theater, Cambridge, Mass., to E. L. Smith.

165 tons, bridge at Marquette, Iowa, for Chicago, Milwaukee & St. Paul railroad, to American Bridge Co.

150 tons, Gude hot houses, Rockville, Md., to Garret Bros.

150 tons, Wellesley College dormitory, Wellesley, Mass., to Boston Bridge Works, Inc.

148 tons, guest lodge for Masonic home, Bloomington, Minn., through J. & W. A. Elliott Co., Minneapolis, to American Bridge Co.

100 tons, Oak Lane apartment, Philadelphia, to Richard DeCou Co.

100 tons, Felton building, Philadelphia, to Richard DeCou Co.

100 tons, First Methodist Episcopal church, Lorain, O., to Reliance Steel & Construction Co.

CONTRACTS PENDING

2400 tons, subway section, New York; general contract awarded McMullern Contracting Co.

2000 tons, Minskoff loft building, Thirty-seventh street between Seventh and Eighth avenues, New York; pending.

2000 tons, Cortlandt-Bishop apartment, Fifty-fifth street, New York; pending.

2000 tons, Taylor-Allderdice high school, Pittsburgh; H. Miller & Son, Pittsburgh, low bidder.

1200 tons, apartment building, 390 Beacon street, Boston; up for refiguring.
1100 tons, Winthrop hotel, Boston; bids being taken.
1000 tons, Natural Science building, Buffalo, N. Y.; bids in this week.
1000 tons, Minskoff apartment, Broadway and 101st street, New York; pending.
875 tons, field house for University of Chicago; Holabird & Roche, 104 South Michigan avenue, Chicago, architects.
800 tons, terminal warehouse, Los Angeles; postponed indefinitely.
760 tons, theater at Madison, Wis.; Rapp & Rapp, 190 North State street, Chicago, architects.
750 tons, Chelsea hotel addition, Atlantic City, N. J.; pending.
700 tons, high school, Pawtucket, R. I., bids in.
700 tons, Salada Tea Co. plant, Boston; bids in.
600 tons, Minskoff apartment, Ninety-third street and Fifth avenue, New York; pending.
540 tons, auditorium, Sacramento, Calif. Mathews Construction Co. low bidder general contract.
500 tons, building for St. Francis college, Butler street, Brooklyn, N. Y.; pending.
500 tons, 10-story bank building, Lima, O.; contemplated.
500 tons, W. A. R. Realty loft building, 5 East Fifty-seventh street, New York; pending.
400 tons, garage, 236 West Seventeenth street, New York; pending.
400 tons, State theater, Youngstown, O.; bids in.
300 tons, No. 2 quarry for Cleveland Stone Co. at Amherst, O.; Geo. S. Rider & Co., Cleveland, architect and engineers.
285 tons, passenger station and grade crossing, elimination work at Erie, Pa., for the New York Central railroad, general contract awarded the Walsh Construction Co., Syracuse, N. Y.
250 tons, auditorium and museum, Reno, Nev.; general contract to J. C. Dillard. Steel not yet placed.
250 tons, Wilkens school, Swissvale, Pa.; bids being taken.
250 tons, miscellaneous bridge work for the Chesapeake & Ohio railroad; pending.
200 tons, theater, Telegraph avenue and Twenty-sixth street, Oakland, Calif.; bids being received.
200 tons, building for New York and Pennsylvania Co., Williamsport, Pa.; pending.
200 tons, machine shop California Portland Cement Co., Colton, Calif.; postponed indefinitely.
186 tons, and 27 tons of machinery, Mormon Channel bridge, Stockton ,Calif. Moore Drydock Co. low bidder.
167 tons, Puyallup river bridge, Pierce county, Wash.; bids opened.
150 tons, American National bank, Mt. Vernon, N. Y.; pending.
100 tons, shops for the Pittsburgh & Lake Erie railroad, McKees Rocks, Pa.; bids being taken.
Tonnage unstated, school, Allentown, Pa.; general contract to Friel McLeister Co.
Tonnage unstated, stadium, Bethlehem, Pa.; expected to go to Bethlehem Steel Co.
Tonnage unstated, three elementary schools, Baltimore; pending.
Tonnage unstated, Swartz building, Baltimore; pending.
Tonnage unstated, Baltimore Life Insurance building, Baltimore; pending.

Concrete Bars

Demand Increasing and Larger Tonnages Being Placed

INCREASING activity in the concrete bar market is unusual for the season. Buying is showing improvement, with more large tonnages being pushed to completion, indicating a tendency to close at present prices before an expected advance materializes. Small tonnage lots continue to move in good number. Road work demands are lessening.

REINFORCING BAR PRICES, PAGE 762

Chicago, Sept. 22.—While awards of reinforcing bars have been fairly heavy the past week, pending work has increased out of proportion. Several jobs requiring 1000 tons or more are developing. The Chicago board of education has been unusually active in new schools and additions and work in contemplation approximates 1000 tons. The market on reinforcing bars continues firm at 2.60c, Chicago.

Boston, Sept. 22.—Demand for concrete bars has shown a marked improvement during the past week. At least four active jobs averaging 1000 tons each are in immediate prospect. Boston warehouse prices are firm at 3.00c.

Pittsburgh, Sept. 22.—Numerous jobs are pending here involving small quantities of reinforcing concrete bars. Fair sized lots will be purchased for the Donaldson warehouse and the Taylor Allderdice high school here, and the Pittsburgh & Lake Erie railroad, McKees Rocks, Pa. The usual quotation is 2.00c although it is understood that 1.90c can still be had on large lots.

Buffalo, Sept. 22.—Inquiry for reinforcing bars is exceptionally active. The most recent bookings were at a minimum of 2.265c for mill shipment bars, it is reported, although a 400-ton lot is thought to have been taken for less. A reduction has been made in stock prices, sellers now quoting 2.65c, Buffalo, on larger lots.

Cincinnati, Sept. 22.—Sellers of reinforcing bars in this district are enjoying a good business, but orders in a majority of cases involve small tonnages. The feature is the demand for bars for highway construction work. New billet bars still are quoted 2.00c Pittsburgh.

Cleveland, Sept. 22.—Increasing inquiries for concrete bars reflect a stronger market, but orders continue small in tonnage. A sewage disposal plant at Willow is expected to take 2000 tons of bars. New billet bars are quoted 2.19c to 2.25c Cleveland, although some 2.09c Cleveland or 1.90c Pittsburgh tonnage is rumored. Rail steel bars are steady at 1.80c to 1.90c, mill, and billet bars from stock at 2.50c Youngstown to 3.10c Cleveland.

Awards Compared

	Tons
Awards this week	3,985
Awards last week	8,168
Awards two weeks ago	2,800
Awards this week in 1924	6,279
Average weekly awards, Aug.	5,371
Average weekly awards, 1925	6,368

CONTRACTS PLACED

700 tons, Cambridge street garage, Boston, to Truscon Steel Co. General contract to Chase & Gilbert, Boston.
400 tons, Boston Elevated extension, Boston, to Concrete Steel Co.
400 tons, Consolidated Gas Co. building, Hunters Point, N. Y., to McClintic-Marshall Co.
375 tons, Creedmore hospital, Long Island, N. Y., to Fireproof Products Co.
350 tons, Manhattan electric building, Jersey City, N. J., to Joseph T. Ryerson & Son, Inc.
300 tons, Coney island boardwalk, New York, to McClintic-Marshall Co.
200 tons, Daggett chocolate factory, Cambridge, Mass., to Penn Metal Co.
200 tons, addition to Atlas plant of Standard Oil Co., Buffalo, to unnamed Buffalo fabricator.
175 tons, killing house for G. H. Hammond Co., Chicago, to Jones & Laughlin Steel Corp.
170 tons, building for Meyers Bros. & Co., Ashland, O., through Lockwood, Greene & Co., to Truscon Steel Co.
150 tons, Holton street viaduct, Milwaukee, to American System of Reinforcing.
125 tons, New York Transfer Co. garage, New York, to McClintic-Marshall Co.
120 tons, sewage disposal plant, Rutherford, N. J., to Truscon Steel Co.
120 tons, Maltz warehouse, Long Island City, N. Y., to Kalman Steel Co.
100 tons, Ruston building, New York, to Truscon Steel Co.
100 tons, foundation for Lake Shore Athletic club, Chicago, to Kalman Steel Co.

CONTRACTS PENDING

2000 tons sewage disposal plant at Willow, Cleveland; bids soon to be asked.
1125 tons, plant addition for American Bank Note Co., Chicago; plans by Frank D. Chase, Inc., 720 North Michigan avenue, Chicago.
1600 tons, New England Confectionery Co. building, Cambridge, Mass.; bids being taken.
900 tons, Statler hotel, Boston, general contract to Dwight P. Robinson Co., Inc., New York; bids being taken.
200 tons, Taylor Allderdice high school, Pittsburgh; H. Miller & Son, general contractor, Pittsburgh, low bidder.
450 tons, Ford assembly plant, Somerville, Mass., bids being taken.
120 tons, city of Minneapolis; pending.
105 tons, sewage disposal plant, Norwalk, O.; pending.
100 tons, Donaldson warehouse, Northside, Pittsburgh; bids being taken.
100 tons, lacquer shop, Pittsburgh & Lake Erie railroad, McKees Rocks, Pa.; bids being taken.
100 tons, buildings for the Standard Sanitary Mfg. Co., New Brighton, Pa.; bids being taken.
100 tons, Oil City National Bank, Oil City, Pa.; to be awarded by a Kalamazoo, Mich. general contractor.
100 tons, grade crossing elimination work on the Baltimore & Ohio railroad, Allison Park, Pa.; general contract awarded T. J. Foley Construction Co., Pittsburgh.
Tonnage unstated, 17-story apartment building for Vista Homes Corp., Chicago. Plans shortly by Paul F. Olson, 720 Cass avenue, Chicago, architect.
Tonnage unstated, 15-story apartment building, Chicago, for Thomas D. Collins, 310 South Michigan avenue, Chicago, general contract to Paschen Bros., 111 West Washington street.

Rails, Cars

Rail Prospects Encouraging Feature of Market—Equipment Buying Improving But Slowly

PROSPECTIVE 1926 rail tonnages are encouraging the railroad market but equipment activity continues to drag. Approximately 600,000 tons of rails are expected to be placed in the Chicago district with 150,000 tons of track fastenings. Carbuilders were disappointed when Illinois Central closed on but 1000, its original inquiry. Chesapeake & Ohio bought 50 locomotives.

RAILROAD TRACK MATERIAL PRICES, PAGE 762

Chicago, Sept. 22.—Railroad business in this district continues largely in a prospective state. All of the western roads are potential buyers, but with an exception of one or two definite cases, allocation of the tonnage has not begun. Rail placements in this district for 1926 delivery are expected to approximate 600,000 tons, and track fastenings 150,000 tons. It appears that the carriers will be later than usual in distributing their orders. The Chicago & North Western railroad is credited with a program of 35,000 tons of rails, a little more than half going to Illinois Stetel Co. and the remainder to the Inland Steel Co. and Bethlehem Steel Co., but the road reports actual distribution has not been made. Track fastening inquiry has been heavy the past week but few orders have been placed.

The Illinois Central has confined its order for automobile cars to the 1000 originally inquired for, instead of doubling it. The Burlington denies a rumor that it will be in the car market soon. Baltimore & Ohio has closed on 1000 underframes to the Standard Steel Car Co.

New York, Sept. 22.—Following the improvement noted last week when more than 3000 freight cars were placed, the market has slowed up. There are few large orders and even less inquiries of importance. The New York, New Haven & Hartford contemplates the purchase of ten freight locomotives. The Chesapeake & Ohio has closed on 50 heavy type with the American Locomotive Co.

Pittsburgh, Sept. 22.—Piecemeal business is still the rule in light rails. In some directions 1.70c is firm while in others where the geographical position of those producing and selling rail-steel light rails at lower figures is favorable, the competition is being met but so far the price of the billet-rolled product has not descended below 1.60c. In some cases the minimum figure is 1.65c.

Railroads are slow to formulate their track accessory purchasing programs but it is understood that some large tonnage specifications are in course of preparation. Demand for small spikes is better than for standard spikes. On the small spikes, some 2.90c figures still prevail although one or two makers are quoting 3.00c as minimum. On standard spikes the 2.80c figure is becoming stronger and the 2.70c price has disappeared. Tie plates are unchanged at 2.35c.

ORDERS PLACED

Illinois Central, 1000 cars, 500 automobile cars each to Pullman Car & Mfg. Corp. and American Car & Foundry Co.

Haynesworth Mining & Transportation Co. six hopper cars, to the American Car & Foundry Co.

Georgia, Florida & Alabama, seven miscellaneous coaches, to the Bethlehem Shipbuilding Corp.

Fruit Growers Express, 375 underframes, to Pressed Steel Car So.

Baltimore & Ohio, 1000 steel underframes, to Standard Steel Car Co.

Lackawana, 15 coaches, to unnamed bidder.

Kansas City, Mexico & Orient, 50 hoppers, to Mt. Vernon Car & Mfg. Co.

ORDERS PENDING

Mathieson Alkali Co., 68 quarry cars; bids asked.

New York, New Haven & Hartford, five gasolene, electric cars and 20 baggage and express car underframes; pending.

Montour railroad, 50 0gondolas; pending.

Import More Pig Iron

Philadelphia, Sept. 22.—Following are importations of iron and steel at this port for the week ending Sept. 19. Pig iron, Luxemburg, 100 tons; Calcutta, 1527 tons; England, 6572 tons; tungsten ore, England, 10 tons; bars, Luxemburg, 123 tons; structural iron, Luxemburg, 373 tons; Germany, 35 tons; galvanized steel strips, Eng-

Wire

Demand Increasing But Production Is Steady — Prices Are Firm

FORMER gains by all classes of wire and its products are being held and sales are increasingly large. Mills are holding production schedules and filling increased demands largely from stocks, which are being reduced and in some lines deliveries are becoming deferred. Prices are increasingly firm and shading seems to have disappeared. Nail stocks are well balanced.

WIRE PRICES, PAGE 762

New York, Sept. 22.—Demand for wire nails is somewhat better, sufficient to increase operations to 50 per cent. A few weeks ago the rate was closer to 40 per cent. There seem to be no exceptions to 2.50c, base Pittsburgh, on plain wire, while on wire nails 2.60c has been done only in some isolated cases and the general market is firm at 2.65c.

Boston, Sept. 22.—Wire sales have improved in New England during the past week. Two sales of 300 tons each are reported and fourth quarter contracts are being entered at a favorable rate. Plain wire holds firm at 2.65c Worcester and 2.85c Boston.

Pittsburgh, Sept. 22.—While orders for wire products still remain small individually, the weekly aggregate is fair and increasing. Demand is especially good for manufacturers' wire but nails are expected to show improvement within the next month or so. Nail stocks in the hands of distributors are well balanced and replacements are not yet necessary in every case, though some are encountering improvement and have sent in rush orders. Operations are about 65 per cent, and deliveries are becoming somewhat more deferred. Prices show increasing firmness on the basis of 2.65c for nails and 2.50c for plain wire.

Chicago, Sept. 22.—Both manufacturing and the jobbing lines of wire and wire products are holding their recent slight gains but the effect is to reduce mill stocks rather than to increase mill operations, which continue at 60 per cent. Prices are unchanged at the basis of 2.55c, Chicago or western mill, for plain wire and 2.70c for wire nails, but these prices show more firmness.

Dismantle Hannah Stack

Dismantling of the Republic Iron & Steel Co.'s Hannah furnace at Youngstown, O., was started last week. Some of the equipment is being shipped to Thomas, Ala. Its annual capacity was 120,000 tons. The Atlantic stack of the company at New Castle, Pa., also is now being torn down. The land on which the Atlantic stack was built recently was purchased by the Pennsylvania railroad and according to present plans will be used for freight yards. The passing of the Hannah and Atlantic stacks leaves the Republic company with five northern furnaces grouped at its Hazelton works.

Nonferrous Metals

Metals in Spotty Demand But Prices Are Firm—Consumers Well Covered on Needs—Higher Prices on Copper, Lead and Zinc

Prices of the Week

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Spot Tin, N. Y. Straits	Lead New York	Lead St. Louis	St. Louis Zinc	Aluminum 98-99%	Antimony Spot	Nickel Ingot
	Cents per pound									
Sept. 16	14.85	15.00	14.22½	58.87½	9.50	9.25	7.75	27.00	17.00	34.00
Sept. 17	14.77½	15.00	14.22½	58.87½	9.50	9.25	7.75	27.00	17.00	34.00
Sept. 18	14.72½	15.00	14.22½	58.75	9.50	9.25	7.77½	27.00	17.00	34.00
Sept. 21	14.75	15.00	14.20	58.87½	9.55	9.25	7.82½	27.00	17.00	34.00
Sept. 22	14.66	14.87½	14.12½	58.50	9.55	9.27½	7.87½	27.00	17.00	34.00

NEW YORK, Sept. 22.—Buying of metals has been spotty lately but prices are firmer after a little easiness. Users in this country appear to be well covered on immediate needs, with some buying done through October, but little beyond that month. Output and shipments on old orders continue at high rates with practically no change. In Europe users are said to need metals soon but buying is retarded by lack of funds, and with domestic strength well established, the upward trend of easiness here depends upon what Europe does. It is stated in many quarters that none of the metals can drop much in the next few weeks, but all are subject to higher prices, the latter statement applying more to copper, lead and zinc, than to tin and aluminum.

Copper.—The red metal has eased off lately with a little metal offered on the market in the absence of buying, but most producers are making little concession, some of them preferring to stay out of the market entirely. At the same time little metal is available in the hands of others. Domestic shipments are so large that it is said stocks will be cut again this month, but there is talk that not all of the metal sent abroad has been sold.

Rolled and Drawn Products.—Prices of brass and copper products, and other rolled metals, have been unchanged in the past week. In fact the first two have not been changed on published lists since early in August, but buying lately has been dull, especially in brass, while copper wire has been moderately active on new sales.

Zinc.—Some export business was done in zinc as the week opened and the market is strong. Galvanizers bought a short time ago and appeared to cover their needs well for a short time ahead. Brass mills have bought some brass special, and high grade is in a strong market.

Tin.—The white metal has been in a strong market lately and although new buying by users has been light, spot metal is in a tight position with a premium of nearly ½ cent as metal arriving appears to be well taken up before it reaches this side.

Lead.—The heavy metal is in a strong market, both in this country and abroad, with users taking all that is produced without buying far ahead. A little premium is returning to the open market.

Iron Ore

More Manganiferous Ore Sold—Inquiries for 100,000 Tons Up

Cleveland, Sept. 22.—A Pittsburgh furnace interest has closed for 25,000 tons of manganiferous ore and a Buffalo furnace has taken a similar tonnage. Continuing experiments in the use of manganiferous ore at the Illinois Steel Co., inaugurated over a year ago, that company recently contracted for 100,000 tons while a Lake Superior producer. Last year it purchased 25,000 tons of Cuyuna ore from the same source. Sales are small. Several inquiries now pending for standard grades call for an aggregate of 100,000 tons. The following is a record of ore consumption in August, with comparisons:

	Tons
Ore consumed in July	3,842,351
Ore consumed in August	4,020,280
Increase in August	177,929
Ore consumed in August, 1924	2,635,759
Ore at furnaces Sept. 1, 1925	28,271,850
Ore on Lake Erie docks Sept. 1, 1925	6,333,420
Total at furnaces and Lake Erie docks Sept. 1, 1925	34,605,270
Total, Sept. 1, 1924	35,703,093

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.12½
Copper, hot rolled	22.75
Zinc, ga. 9 to 17	10.50
Lead full sheets (cut ¼c more)	13.00 to 13.50
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.75
Copper	24.75
RODS	
High brass (round ⅝ to 2½-inch)	16.62½
Naval brass	19.62½
WIRE	
Copper	16.62½ to 16.75
High brass	19.62½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25
Chicago	9.50
Cleveland	9.50 to 9.75
HEAVY YELLOW BRASS	
New York	7.25
Chicago	8.00 to 8.50
Cleveland	7.50 to 7.75
ZINC	
New York	4.50
Cleveland	4.25 to 4.50
HEAVY COPPER AND WIRE	
New York	12.00
Chicago	11.50
Cleveland	11.50 to 11.75
RED BRASS TURNINGS	
New York	8.50
Chicago	9.00 to 9.25
Cleveland	8.75 to 9.00
YELLOW BRASS TUBING	
Cleveland	6.00 to 6.25
LIGHT COPPER	
New York	9.50
Chicago	10.50
Cleveland	9.75 to 10.00
LIGHT BRASS	
Chicago	7.50
Cleveland	6.00 to 6.25
ALUMINUM	
Borings, Cleveland	11.00 to 11.50
Old sheet and cast, Cleveland	17.00 to 17.50
Clippings, Cleveland	21.00 to 22.00

Secondary Metals

Remelt aluminum No. 12	23.50 to 24.00
Brass ingot 85-5-5-5	12.25 to 12.75

Coke By-Products

Sulphate Prices Advanced—Distillates in Fair Demand

New York, Sept. 22.—Spot quotations on sulphate of ammonia have been advanced approximately 5 cents per 100 pounds, now holding at $2.80 to $2.85, delivered. Trading is dull, following recent contracting. However, sold-up production gives the market a buoyant tendency. The export market is nominally unchanged at $2.75 port, for material in double bags.

Light oil distillates continue in fairly good demand, with supplies none too plentiful. Xylol and solvent naphtha are subject to shipment delays of three to four weeks. Benzol and toluol can be had for spot shipment in small quantities. Prices are unchanged, with pure benzol for nearby shipment holding at 25 cents works in carload lots and 30 cents in drums; 90 per cent, 24 cents in tanks and 26 cents in drums; commercial xylol 27 cents works in tanks and 31 cents in drums, and solvent naphtha 26 cents in tanks and 31 cents in drums.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.25	
Toluol	0.26	
Solvent naphtha	0.26	
Commercial xylol	0.27	
Per Pound at Producers' Plants		
Phenol	0.23 to 0.24	0.22 to 0.23
Naphthalene flakes	0.05½ to 0.06½	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½	0.06½ to 0.07½
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.82½	

Coast Building Leads

Structural Activity Leads, with Many Projects Active —Prices Generally Weak

BY AIR MAIL

SAN FRANCISCO, Sept. 19.—Structural shape activity again leads the various steel markets on the Coast this week. Taken as a whole, demand has not yet reacted to the holiday period of last week and bookings has been small lots for the most part. Interest continues centered in the Mokelumne pipe line project, bids on which were opened in Oakland Sept. 4. No action is expected until Sept. 25. The expected upward trend of prices has not yet begun, in fact, a further weakening is noted in at least one line.

Pig Iron and Coke

During the past week 4000 tons of English coke and 2000 tons of English pig iron has arrived on the Coast for consumption in the Los Angeles and San Francisco district. Orders for this material were taken several months ago in small lots from numerous foundries. Dutch iron (2.75 to 3.25 silicon), is now quoted at $24 a ton c.i.f. duty paid, a reduction of 25 cents a ton, while it is reported one sale of Indian iron was made below $24, a reduction of $1 a ton.

Coast Pig Iron Prices

No. 2 Columbia, San Francisco	27.00 to 28.00
No. 2 Columbia, Los Angeles	27.00 to 28.00
No. 2 Columbia, Portland	27.50 to 28.50
No. 2 Columbia, Seattle	27.50 to 28.50
Columbia basic delivered	27.00 to 28.00
*Dutch (2.75 to 3.25)	24.00
*Indian iron	24.00
*Belgian (2.00 to 2.50)	25.00
*English iron (2.00 to 2.50)	27.00
*English iron (2.50 to 3.00)	27.50 to 28.00
*English (3.00 to 4.00)	28.00 to 28.50

*C.I.F. duty paid, coast ports.

Bars, Plates and Shapes

Although all concrete bar awards reported this week involved small lots of 20 to 60 tons a fair number of larger ones are pending. Prices are far from firm and on out-of-stock material as low as 2.90c has been done on mill lengths and cut-to-length sizes in carload lots have ranged up to 3.10c, f.o.b. San Francisco. On less than carload lots the price ranges from 3.35c to 3.80c, one or two jobbers reporting orders booked at the higher price this week. Little of importance has taken place in merchant bars.

Prices on plates range from 2.25c to 2.30c c.i.f. Coast ports, the former applying only on large and desirable tonnages. No awards of over 100 tons were reported this week. Pending business, exclusive of the 80,000-ton Mokelumne pipe line, exceeds 6000 tons, the newest inquiry of the week calling for 300 tons for a large tank tower at Portland.

Structural shape awards in this district aggregated over 3000 tons during the week exclusive of the usual run of small lots. The Judson Mfg. Co. secured 1350 tons for the Latham Square building in Oakland and the McClintic-Marshall Co. of Calif. took 950 tons of buildings for the Phelps Dodge Co. in Douglas, Ariz. Over 6500 tons are pending. It is reported this week that one or two small independent mills have quoted 2.30c c.i.f. but the larger interests are holding firm at 2.35c as a minimum with 2.40c applying on small lots.

Other Finished Material

The United States Steel Products Co. secured 150 tons of sheet piling for an interest in Esquimalt, B. C. The Key System Transit, Oakland, Calif., has placed 200 kegs of track spikes with an eastern company. The Cyclops Iron Works was awarded one 15-ton 4-motor cab control 34-foot span overhead traveling crane with a 5-ton auxiliary hoist for the Anderson & Barngrover Co. of San Jose, Calif.

While a fair demand for all forms of tubular goods is in evidence few large projects have come up for figures recently. The San Jose Water Co. has placed 311 tons of 6 and 4-inch pipe with Mark-Lally Co.

Six awards of cast iron pipe involving 100 tons or more were placed during the week, among which was 371 tons for Los Angeles taken by the United States Cast Iron Pipe & Foundry Co. Pending business totals over 2000 tons. Prices remain around $50 a ton base delivered.

Although most eastern producers of galvanized sheets are attempting to hold to 4.30c, base Pittsburgh, or equivalent, on No. 28 gage, consumers report little difficulty in obtaining 4.20c or even 4.15c. Tonnages offered have involved small lots for immediate consumption and apparently little thought is being given to future requirements. On No. 10 gage blue annealed 2.20c to 2.30c base Pittsburgh, appears to be the range with 3.15c base applying generally on No. 28 gage black sheets.

Warehouse distributors report a slightly better movement during the past week with all lines fairly active.

Northwest Market Firm

SEATTLE, Sept. 16.—Iron and steel are participating in generally satisfactory conditions in the Pacific Northwest. The volume of business is good and is increasing as the fall turnover gets under way.

While iron and steel prices are not all that might be desired the market appears more stable than 30 days ago. Buying has not developed large tonnages but the volume is increasing.

No recession in building activity is apparent in Oregon and Washington. Home construction is unusually brisk while office buildings and apartment houses are being announced daily. Construction and public improvement works are under way on a large scale in both states. The Washington state highway commission has 23 bridges already designed and most of them under contract, the total cost of which will be $2,700,000. Other structures, including the Vantage Ferry bridge, designs for which are not yet completed, bring steel and concrete bridge expenditures to a total of $3,500,000. The present biennium is expected to set a high water mark in bridge construction in this state. The cost of these structures runs from $1800 to $750,000, the latter being the cost of the Puyallup river bridge at Tacoma, contracts for which have just been awarded.

Foundry operations are curtailed owing to lack of new work and consequently buying of materials is at a low ebb. Importers are making deliveries of pig iron and coke from Great Britain and the Continent on orders placed some time ago. Prices are the same.

Bars, Plates and Shapes

The volume of steel bar business is assuming fair totals, but business is confined to small tonnages. The local mill is operating on the same basis as during the last month. Mill price on bars continues at 2.45c. There is no change in wholesale warehouse prices, 3.25c here and 2.85c at Portland.

Mill prices of plates and shapes are stationary, the lowest quotations being 2.30c and 2.35c respectively. No reports are current of lower quotations. Light plates are moving fairly actively, demand being good for storage and oil tank jobs.

Cast Iron Pipe

Mill representatives report continued active inquiry for cast iron pipe. Business for some time has been confined to small tonnages. Florito Bros., Seattle, were low bidders at $150,000 for the Hinds street water main. Material will be furnished by the American Cast Iron Pipe Co.

Old Materials

Prices and conditions are unchanged. Steel scrap is still quoted at $10 and $10.50 gross. No. 1 cast iron is moving slowly as demand is lacking. The average price remains $18 gross.

Combines Rule German Trade

Formation of Selling Organization Follows Control of Production — Unemployment Increasing—British Mills Rerolling Low-Cost Foreign Steel — Tin Mill Association To Regulate Output

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Sept. 22.—(*By Cable*)—British mills are rerolling large tonnages of low priced foreign steel, while demand for the domestic material continues slow. Orders for small tonnages of structural shapes have increased. British tin mills are busier, and they are expected to adopt the proposed plan for regulating output.

German interests are completing their general price and selling organization, affecting half of the German finished steel producing capacity, and 30 per cent of pig iron. It is expected that the German trade soon will be completely dominated by syndicates.

Operations in the German iron and steel industry average 65 per cent of capacity. Unemployment in that country is increasing. Trade is financially hampered, necessitating unprofitable sales of steel stocks. Extensive price cutting is noted.

Reports from France this week indicate pig iron production is increasing.

British Autumn Revival in Steel Meets Delay

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Sept. 11.—(*European Staff Service*)—Isolated instances of improvement are to be found, but the autumn revival rather confidently anticipated is still delayed, mainly because of the downward tendency of prices for the chief products. Cleveland No. 3 pig iron has been reduced to £3 8s, ($16.49) the lowest price since 1915, yet that district is unable to compete with foreign iron, still sold to some extent in the Clyde area. Foreign competition is naturally more effective on the Continent, a state of things reflected in the meagre Middlesbrough exports. There are signs that French makers have captured a

Sterling $4.85

fair share of the hematite trade with Italy. America is still a buyer of East and West Coast iron, though the shipments are not large. East Coast mixed numbers are quoted at £3 15s ($18.18). Although the production on the west coast is scarcely equal to demand, stocks requiring to be somewhat heavily drawn upon, prices are still showing decided weakness. Within the last two months 7000 tons of foreign iron bars have been landed on Tees-side.

The chief element in price weakness is the abundance of coke, but prices appear to be steadying a little in this department. There is, however, insufficient confidence to make forward contracts, and transactions are therefore restricted to the supply of immediate needs. Midland pig irons are cheaper by 6d ($0.12) per ton, Northampton No. 3 being quoted at £3 2s ($15.03) and Derbyshire at £3 7s ($16.24). Demand in the Midland district appears to be about equal to the production.

The market shows an increase in inquiries for most descriptions of steel. Constructional engineers are becoming busy in the handling of numerous tenders, some of which have to do with foreign undertakings. Much home work, however, is now coming in the market in the way of

(*Concluded on Page* 792)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, September 21	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Despatch—By Cable								
PIG IRON		£ s d		Francs		Francs		£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.61	3 8 6*	$14.73	310	$13.89	315	$18.67	3 17 0
Basic	16.49	3 8 0	14.73	310	14.11	320	21.58	4 9 0
Basic-bessemer	19.40	4 0 0†	14.96	315	13.67	310	20.13	4 3 0
Hematite, Phosphorus 0.02-0.05	18.31	3 15 6	20.90	440	.....	...	21.83	4 10 0
SEMIFINISHED STEEL								
Billets	$27.89	5 15 0	$22.56	475	$21.17	480	$23.52	4 17 0
Wire rods	44.86	9 5 0	29.45	620	29.55	670	27.89	5 15 0
FINISHED STEEL								
Standard rails	$38.80	8 0 0	$24.94	525	$22.93	520	$31.53	6 10 0
Merchant bars	1.78c	7 15 0	1.30c	605	1.12c	560	1.19c	5 8 0
Structural shapes	1.57c	7 5 0	1.17c	545	1.10c	550	1.19c	5 8 0
Plates, ship, bridge and tank	1.62c	7 10 0	1.42c	660	1.35c	675	1.43c	6 10 0
Sheets, black, 24 gage	2.27c	10 10 0	2.58c	1,200	2.25c	1,125	2.81c	12 15 0
Sheets, galvanized, 24 gage, corrugated	3.52c	16 5 0	3.99c	1,855	4.50c	2,250	3.96c	18 0 0
Bands and strips	2.22c	10 5 0	1.51c	700	1.50c	750	1.67c	7 12 0
Plain wire, base	2.38c	11 0 0	1.96c	910	1.60c	800	1.82c	8 5 0
Galvanized wire, base	3.03c	14 0 0	2.47c	1,150	2.10c	1,050	2.04c	9 5 0
Wire nails, base	3.14c	14 10 0	2.15c	1,000	1.70c	850	2.09c	9 10 0
Tin plate, base box 108 pounds	$ 4.73	0 19 6	.....	...	.....	...	$ 6.55	1 7 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.61	3 8 6	$16.39	345(2)	$14.33	325	$20.01	87
Basic pig iron	17.58	3 12 6	16.39	345(1)	13.89	315	20.93	91
Furnace coke	3.03	0 12 6	6.75	142	5.51	125	5.52	24
Billets	27.89	5 15 0	19.19	440	21.61	490	27.60	120
Standard rails	1.73c	8 0 0	1.14c	530	1.05c	525	1.48c	142
Merchant bars	1.78c	7 15 0	1.17c	545	1.17c	585	1.35c	129
Shapes	1.57c	7 5 0	1.08c	500	1.11c	555	1.38c	132
Plates, ship, bridge and tank	1.78c	7 15 0	1.61c	750	1.36c	680	1.56c	150
Sheets, black, 24 gage	2.33c	10 15 0	2.60c	1,210	2.25c	1,125	2.56c	245
Sheets, galvanized 24 gage, corrugated	3.52c	16 5 0	4.03c	1,875	4.60c	2,300	3.91c	375
Plain wire	2.38c	11 0 0	1.96c	910	1.60c	800	1.98c	190
Bands and Strips	2.33c	10 15 0	1.51c	700	1.50c	750	1.56c	150

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 6d ($3.03) f. o. b. Ferromanganese £15 10s 0d ($75.18) f. o. b. German ferromanganese £15 0s 0d ($72.75) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

Equipment Buying Continues in Good Volume—Recent Exhibitions Stimulate Trade —Sales of Cranes Show Decided Slump

WHILE no unusual sales of machine tools and equipment are being made, the volume of small orders may be considered satisfactory. With the New Haven machine tool exhibition and the Cleveland steel show of the American Society for Steel Treating both over, sales are being stimulated. At these shows numerous sales were made from the floor and large prospect lists were obtained. Buying by railroads has been light for some time, but considerable equipment is pending. Awaiting the outcome of the present anthracite coal strike, however, the roads are showing a disposition to hold off. As an exception, the New York Central is expected to issue a sizable list shortly. Purchases by the automobile industry continues the bright spot.

New York, Sept. 22.—A fair amount of scattered inquiry prevails, but buying of machine tools is falling short of expectations. The anthracite coal strike is bearing upon the situation, inasmuch as several railroads which are heavy haulers of coal have postponed action until some settlement in the coal fields has been reached. This applies particularly to the Lehigh Valley, which is said to have laid off approximately 500 men. Delaware, Lackawanna & Western also is affected and the Erie railroad to a lesser degree. Ontario & Western has laid off 400 men and is said not to be in a receptive mood at this time when it comes to the purchase of equipment. Encouraging, however, is the report that the New York Central railroad contemplates the issuance shortly of a sizable list, principally for its western lines. This railroad has recently closed on three turret lathes. J. C. Brill Co., Philadelphia, has closed on one turret lathe. Other buyers of equipment include Pittsburgh Street railways, Pittsburgh, which purchased a car wheel lathe, and McKiernan-Terry Drill Co., Dover, N. J., which has bought an 1100-pound steam hammer, both orders going to the Niles-Bement-Pond Co. Long Island railroad is inquiring for spring shop equipment. The crane market reflects the dullness of the past two or three weeks.

Boston, Sept. 22—Chief interest in the tool market during the past week at Boston has centered in used equipment. Two eastern Massachusetts manufacturers are liquidating moderate lists of machine tools and many sales from the surplus stock of Taft-Pierce Mfg. Co., Woonsocket, R. I., are reported. One of the leading dealers in used equipment in Boston reports the largest total sales in many weeks. New tool sales have been comparatively few. A Rhode Island manufacturer bought a grinder and another grinder was placed with the Bethlehem Shipbuilding Co., Fore River, Mass. The sale of two sensitive drills to a Worcester manufacturer is reported. Both inquiry and sales of milling machines are reported fairly active and this is reflected in the announcement by one important maker of a 10 per cent advance effective at once on his entire line of milling machines. Boston & Albany railroad is inquiring for a shaper and some special equipment.

Pittsburgh, Sept. 22.—The machine tool trade has been quiet in Pittsburgh and vicinity this past week or so, with a large number of the sellers attending the national steel show of the American Society for Steel Treating at Cleveland. However, occasional sales have been made and feature the purchases of the American Sheet & Tin Plate Co. for Chester, W. Va., and other plants. Brown & Zortman Machinery Co. received orders for a 5-foot radial drill and a 24-inch x 14-foot lathe. Another radial drill and three or four lathes, etc., also were purchased and several other industrial companies in this vicinity bought single machines of various types. New inquiries, particularly large lists, are not so numerous. Considerable crane business is pending here and occasionally an order is placed. The largest crane order recently received calls for three locomotive cranes for a local general contractor.

Cincinnati, Sept. 22.—Orders received by builders of machine tools in this district the past week were slightly in excess of those for previous weeks. Cincinnati Planer Co., received an order from the Mansfield Trade school for a 24-inch planer, while a lathe manufacturer received an order for two lathes from the Cincinnati Southern Railway Co. for its Burnside, Ky., shops. A feature of the market is the number of inquiries from automobile manufacturers. Builders of lathes and milling machines are receiving more orders for export shipment. Dealers in used machinery are enjoying better business than recently.

Chicago, Sept. 22.—Machinery sales are running at a rate higher than both July and August. Several radio parts manufacturers have been good buyers of punch presses. Two printing trade companies each have taken several turret lathes, grinders and drill presses. Fairbanks, Morse & Co. has closed on its list for Beloit, Wis. Both the A. O. Smith Corp., Milwaukee, and Nash Motors Co., Kenosha, Wis., are about to close on additional equipment. Allis-Chalmers Mfg. Co., Milwaukee, is expected to act shortly on a large radial drill. Burlington railroad is inquiring for a bench grinder. Illinois Steel Co. is near final action on its list, but the Youngstown Sheet & Tube Co. list will not be closed for several weeks. Many sizable railroad lists are out but machinery sellers believe the Western roads are deferring action until their demand for a rate advance is met.

Cleveland, Sept. 22.—Machinery dealers here are feeling the effects of the national steel show of the American Society for Steel Treating held here last week. Many already have received orders for equipment which was on display and all secured good prospect lists. As a result it is expected that good orders will drift in from time to time. There is a feeling in some quarters that price advances will be made before long. Manufacturers are enjoying good business although orders are small and well scattered. One local manufacturer of automatics during recent weeks has taken for export to France orders totaling approximately $100,000. Used tools continue in fair demand with good prospects for the fall.

CRANE ORDERS PLACED

Four 1-ton pitting cranes for American Car & Foundry Co., New York; reported placed with Shaw Electric Crane Works.

Three 10-ton locomotive cranes for Furguson & Edmondson Co., Pittsburgh, general contractor; to McMyler Interstate Co.

Among single orders were: 20-ton used crane for Harry Goldberg, Perth Amboy, N. J., to Botjer & Sons; 50-ton electric overhead crane for National Tube Co., Lorain, O., to Shaw Electric Crane Works; 25-ton locomotive crane for Aluminum Co. of America, Pittsburgh, for shipment to Ha Ha Junction, Quebec, placed with a Michigan or Ohio builder.

CRANE ORDERS PENDING

Eight revolving steel derricks, four of 3½-tons capacity and four of 1500 pounds for Fox Bros. & Co., New York, for export; pillar cranes are specified as alternates.

10-ton electric gantry crane for Stearns Roger Mfg. Co., Denver, Colo.; bids asked.

A petition in bankruptcy has been filed against the Taxicab Mfg. Corp., 31 East 133rd street, New York.

Sheet Mill Wages

Reduced So Low By Selling Prices Operators Are Concerned

Youngstown, Sept. 22.—Some sheet mill operators are concerned over the wage situation in their industry, not because of any failure of the sliding scale principle in the Amalgamated association scale book but because of the possibility of unrest among the sheet mill workers which may occur because of selling prices of sheets during the last two months. Lower selling prices of sheets result in lower wages for sheet mill crews at plants where the sliding scale prevails.

The Amalgamated scale is based on the average selling price of 26, 27 and 28 gage black sheets over two months. That price is the base for sheet mill wages for the ensuing two months. At the meeting in Youngstown last week sheet makers' books disclosed the average price in the July-August period was 3.10c, Pittsburgh. For the preceding two months the average was 3.25c. The new rate is a reduction of 4½ per cent.

Sheet producers have recognized that selling prices were on the wrong side of the ledger, but they had to meet competitive quotations or lose accounts of long duration. They did not realize that low prices might breed dissatisfaction among their workmen who have had to submit to lower wages.

It is pointed out that considering the difference between the semi-skilled and the skilled wage rate in the various trades throughout this country, the sheet mill workman is one of the poorest paid individuals. Nearly all trades receive about 60 per cent higher wages than the 1914 rate. The sheet mill worker is receiving only 28½ per cent above the 1914 base. The sheet industry is working about 88 per cent capacity, and at a loss. Mill operators are working with their sales departments in an effort to stabilize present selling prices.

Wage Adjustment Made at One Plant

Pittsburgh, Sept. 22.—The employes of the W. D. Wood works of the American Sheet & Tin Plate Co., McKeesport, Pa., who walked out Sept. 17 were ready to return to work on Friday after they understood fully the wage readjustment which had been made amounting to about 8 per cent. The wage rate paid at this plant has been approximately 10 per cent higher than the general sheet wage scale, as settled bi-monthly among the independent mills through the Amalgamated Association of Iron, Steel and Tin Workers. The men were not allowed to return until Monday, however, but now the usual rate of operations prevails.

Sheet Prices Translated Into Mill Wages

Bi-monthly wage adjustments in sheet and tin plate mills operating under agreement with the Amalgamated Association of Iron, Steel & Tin Workers generally are expressed in percentages above base. The accompanying table shows what a wage change means in dollars and cents.

The average selling price of 26, 27 and 28 gage black sheets by mills represented in the Western Sheet & Tinplate Manufacturers association in May and June was 3.25c per pound. This established the wages for sheet and tin mill workers for July and August. In July and August the average selling price was 3.10c, fixing wages for September and October.

The table shows the old and new wages paid to different employes in the sheet mills, based upon a tonnage of 16,000 pounds per 8 hours work on 18, 20 21 and 22 gages. The rates paid to rollers and heaters are not shown because they are said to be satisfactory to employes:

	Old Rate 18-20 gage	New Rate 18-20 gage	Old Rate 21-22 gage	New Rate 21-22 gage
Heater helper	$4.30	$4.15	$5.25	$5.06
Pair heater	6.13	5.97	7.35	7.15
Rougher	6.24	6.04	7.02	6.80
Catcher	6.24	6.04	7.02	6.80
Matcher	4.87	4.72	6.04	5.84
Doubler	4.59	4.44	5.68	5.50
Average	5.39	5.22	6.89	6.19

Red Reprints Ready

EXTRA copies of the special print of IRON TRADE REVIEW'S *series of eight articles on the red movement remain available for distribution. The articles as they appeared originally in consecutive issues of* IRON TRADE REVIEW *have been assembled and bound, making one complete pamphlet containing a good description of the socialist and communist organizations at work in the United States, and their methods. The articles detail the information that industrial executives have wanted. One company recently ordered 2000 reprints. The remaining copies may be had at a nominal charge.*

Universal Conveyor Co., South Bend, Ind., has petitioned for receivership in superior court No. 2.

Furnace Receiver Sells 38,000 Tons of Iron

Youngstown, Sept. 23.—All the pig iron of various grades stored on the yards of the Struthers Furnace Co., Struthers, O., has been sold finally. The last tonnage was taken by Hickman, Williams & Co., a total of 38,000 tons. Of this total, 10,000 tons were basic and the remainder, about 28,000 tons, foundry grades. The purchase was made through the New York banks which had loaned $675,000 on the tonnage, or equal to $17.75 a ton. However, it is understood the basic brought $18.90 a ton and the foundry iron $19.30, the company through Receiver Hugh W. Grant being paid an additional $1 a ton for which the Struthers company released all claim upon the iron. There still remain 16,000 tons of pig iron on the furnace company's yards belonging to the First National bank, of Pittsburgh, which it took over as against loans made thereupon to the old company up to $19 a ton. Hickman, Williams & Co. have six months in which to remove the iron from the Struthers company's banks. The negotiations still must be approved by the court of common pleas of Mahoning County.

Pig Iron Advance Is Continued

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field Steel & Iron Co., with five furnaces in operation, is cutting down its surplus stock. The Woodward Iron Co. has very little iron on yards and has three furnaces on foundry and one on basic.

New York, Sept. 22.—Despite recent efforts to advance pig iron, lower prices were developed during the past week. Buffalo foundry iron was sold at $18, base, furnace, although the present asking price is $19, base. Some eastern Pennsylvania foundry iron was sold at $21, base, furnace, but most of it went at $20.50. Demand is larger. Sales in this district in the past week totaled at least 15,000 tons. New inquiries aggregate several thousand tons, including some for first quarter. The H. B. Smith Co., Westfield, Mass., bought 7500 tons of Buffalo and Indian iron, W. H. Gurney, heating contractor, Paterson, N. J., bought 1000 tons of Buffalo iron and still wants 1000 tons of eastern Pennsylvania iron. The American Locomotive Co. bought 4500 tons in four different districts; the Central Foundry Co. 1000 to 2000 tons; Gould Coupler Co., 1000 tons of malleable and the Standard Gas & Equipment Co., 750 tons. Another consumer in this district bought 7500 tons from Buffalo and eastern Pennsylvania furnaces. The New York Central railroad is inquiring for 800 tons. Witherbee, Sherman & Co. is selling iron and expects to light its Port Henry, N. Y., furnace in about six weeks.

Institute Gets American Ideas

Engineering Progress in United States Feature of Comment in British Meeting —Speakers From This Country on Program—Details of New Swedish Direct Process Described

BIRMINGHAM, Eng., Sept. 10.—The autumn meeting of the Iron and Steel institute held after an interval of 30 years in Birmingham, from Sept. 8 to 11, had several features of interest, one of which was the prominence of American authors and speakers, who were complimented for their share in notable achievements. The attendance comprised about 500 members.

In the course of the proceedings, the president, Sir Frederick Mills, Bart., announced as his successor, Sir Peter Ryland, Bros. Ltd. wire manufacturers, and past president of the National Federation of British Industries. Sir Frederick is director of the well-known steelmaking firms of Partington Iron Co. Ltd. and Pearson & Knowles Iron Co. Ltd.

The place of first importance on the program was given to the paper by Henning Flodin, Stockholm, describing a new direct process for the manufacture of steel. This paper had a preliminary announcement from the president, Sir Frederick Mills, who mentioned at the May meeting that he had seen the system in operation at Hagforss, Sweden. It was at his request that this paper was presented. The results of experiments led to the erection of an electric furnace for testing the system on a large industrial scale. The furnace carried a load of 250 to 300 kilowatts, from which 114 tappings had been made. It is claimed that the furnace is a success and that the resulting steel is better than could be produced from the best bessemer steel. The process works direct on a mixture of ore and coal in a single furnace, and the product is in the form of malleable iron and steel capable of being teemed into chills or other molds. No refinement in special furnaces is necessary for the removal of phosphorus and sulphur.

The paper met with some rather sharp criticism from several experts. Sir Robert Hadfield, while admitting that there probably is an important future for such developments, and that exclusion of the blast furnace would probably produce a purer product, considered that a good deal more information was necessary. He pointed out that no microstructure of the steel had been shown.

Iron "Eternal"

DURING the meeting of the Iron and Steel institute a paper on "Ancient Iron from Richborough and Folkestone," was presented by J. Newton Friend and W. E. Thorneycroft. The authors laid stress on the fact that some of the ancient irons were less subject to corrosion than modern irons and steels.

Sir Robert Hadfield produced some specimens taken from the Delhi pillar of India, which had to be obtained secretly by night because the pillar is regarded with superstitious reverence. He found that the Delhi pillar which was 23 feet in height and 16 inches in diameter contained iron 99.72 per cent pure, and was "superior to the best Swedish material." It had stood for 1600 years and had shown itself to be practically noncorrodible.

Professor Louis, Newcastle-on-Tyne, said that so far it has proved impossible to handle direct production on the large scale required by modern conditions. A great advantage claimed for the new process is the exclusion of sulphur and phosphorus.

D. F. Campbell, London, agreed that the question is one of cost. The expenditure of 2700 units per ton of iron was slightly higher than the cost of pig iron. His estimate was that at 0.9d of a unit that would cost about £10 per ton, and the lowest he had heard of was 0.3 per penny, which was quite impossible to many steelmakers and that would work out at £3 7s per ton for the producing agent.

E. H. Saniter, Rotherham, member of the council said the so-called invention had not really been described in the paper, and he would be glad if the author would give that description.

Dr. Hatfield said he considered that there was insufficient evidence to enable steelmakers to form a judgment.

F. W. Harbord, London, vice president, said the crux of the whole positon was whether money was to be made out of the direct process.

Great interest was displayed in the paper written by W. R. Martin, Chicago, describing a steel car wheel and its manufacture in England. He pointed out that this wheel had replaced the ordinary rolled steel wheel and he had been engaged by John Brown & Co. Ltd., to build a plant at the Scunthorpe works for the production of the wheels. The author showed the wheel in successful operation, in some cases carrying 100-ton wagons. The discussion which followed was highly appreciative.

Sir William Ellis, past president, Sheffield, spoke as chairman of John Brown & Co., the firm adopting the new wheel. He said he was glad to acknowledge that nothing could have been more straightforward and complete than the information afforded to Great Britain by American metallurgists in connection with the wheel.

Mr. Martin explained that the manganese in the wheel was added in the finely divided form, carefully sized and injected by air pressure, which operated automatically, depositing manganese within one-fifth of a second. He said approximately 1,000,000 of the wheels are in use in America.

The remainder of the first session was devoted to the reading of a paper on "Steel Molding Sands and Their Behavior Under High Temperatures," by A. L. Curtis, Chatteris, Cambridge.

Professor Turner recognized the valuable work done by the American Foundrymen's association in connection with sand molding and acknowledged the value of the studies also carried out by the British Cast Iron Research association. The essential requisites of a good foundry sand, he said are that it must not be too fine or deficient in permeability and must not be too dry involving deficiency in density. Also it should not melt too readily.

America was again prominent in the second day's proceedings, J. L. Keenan having come over especially from New York to present a paper entitled "Notes on Blast Furnace Practice in India, with Special Reference to Economy in Coke Consumption." The author is blast furnace superintendent to the Tata Iron & Steel Co. Ltd. of Jamsheddpur, India. The paper described in much detail the furnace arrangements and the daily practice in connection with Tata pig iron production. Much of the comment on the paper was highly complimentary of the Indian works.

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Steel Treater Meeting Success

Cleveland Convention and Exposition of the American Society for Steel Treating Is One of Best Held by the Society— Officers for 1926 Are Nominated

WITH a registration of approximately 5000 and a total attendance of over 40,000 at the steel exposition at Cleveland last week Sept. 14-18 the American Society for Steel Treating added another successful convention to its record of achievements. Both the convention and exhibition were unusually satisfactory, particularly the latter for never before has the society had the opportunity to conduct the exposition in a hall possessing facilities equal to those of the Cleveland Public Auditorium. These facilities as well as the fact that the Auditorium is within walking distance of the convention hotels had much to do with the success attained. Attendance at this show appeared to be of a considerably more interested character than previously. Some 15 foreign countries were represented at the convention, this signifying that export trade is being investigated. Exhibitors, particularly those showing machine tools, report many orders received.

Technical sessions were well attended and more efficiently handled than ever before, resulting in more and better discussion. The Society of Automotive Engineers held a production meeting in Cleveland the first three days of the week, an arrangement which proved advantageous to both societies. At the annual business meeting of the American Society for Steel Treating, all reports indicated gratifying progress. R. M. Bird of George F. Pettinos, Inc., Philadelphia, was nominated for the presidency in 1926. J. F. Harper, Allis-Chalmers Co., Milwaukee, was the nominee for vice president and Dr. Zay Jeffries, Aluminum Co. of America, was renominated for treasurer. Directors nominated were H. J. Bornstein, Deere & Co., Moline, Ill., and R. G. Guthrie, Peoples Gas Light & Coke Co., Chicago. Election of officers will take place this fall.

Inspection trips were made to a number of Cleveland plants during the week. Entertainment features of the convention program were a smoker on Tuesday night, a ball on Wednesday night and the annual banquet on Thursday night. At the banquet, honorary membership in the society was conferred upon Dr. Charles F. Brush of Cleveland. The Henry Marion Howe Medal was awarded to Dr. H. H. Lester of the Watertown arsenal, Watertown, Mass.

Heat Treating Discussed at Many Sessions

STARTING the meetings of the American Society for Steel Treating in their seventh annual convention, the technical session held Monday morning in the Cleveland hotel was unusually well attended. This was especially satisfying, because this year is the first time the steel treaters have made a determined effort to handle papers on a definite schedule with timed discussion. H. A. Schwartz presided as chairman.

"Interpretation of Notched Bar Impact Test Results," by Paul H. Heymans, Massachusetts Institute of Technology, Cambridge, Mass., was presented in abstract by T. H. Frost, also of the institute. This paper discussed tests to determine stress distribution around notches on impact specimens.

The second paper, "Chemical Composition of Tool Steels," by J. P. Gill, and M. A. Frost, Vanadium-Alloys Steel Co., Latrobe, Pa., discussed in detail the chemical compositions of various tool steels, pointing out that while the chemical composition of a steel is basic, the microscopic structure is also very important. Attempts to standardize tool steel specifications were declared at present injurious to the industry. A. H. Kingsbury, Crucible Steel Co. of America, New York, took exception to the maximum limits of nickel and manganese given.

"Experiments with Nickel, Tantalum, Cobalt and Molybdenum in High Speed Steels," the final paper, by H. J. French and T. G. Digges, bureau of standards, Washington, was presented by Mr. French.

Numerous stereopticon slides illustrated the presentation by D. J. McAdam Jr., United States naval engineering experiment station, Annapolis, Md., of his paper on the "Effect of Cold Work on Endurance and Other Properties of Metals."

A mathematical analysis of the data of graphitization was featured in "Graphitization at Constant Temperature" by H. A. Schwartz, National Malleable & Steel Casting Co., Cleveland. The author described the discovery of a comparatively easy means of measuring graphitizability by calculation of the carbon precipitated in a given time, declaring this method to be of large practical application.

J. R. Adams and F. E. Goeckler, Midvale Co., Nicetown, Philadelphia, were the authors of the joint paper, "Some Factors Affecting Coercive Force and Residual Induction of Some Magnetic Steels." The investigations, conducted to obtain data of commercial application, considered the coercive force and residual induction factors only. It was asserted that in

Reports Good Year

THE annual business meeting of the American Society for Steel Treating was held at the Cleveland hotel Wednesday morning. W. H. Eisenman reported on Aug. 31 the society had a membership of 3360 as against 3062 one year ago. This indicated a gain of 298 or 11 per cent and is in keeping with the progress of the last few years.

He commented briefly on the work of the recommended practice committee, stating that to date the society has issued 243 pages of data sheets covering 38 subjects. Of this number 135 pages covering 24 subjects had been issued during the past year. Mr. Eisenman announced that 70 requests for space for the Cleveland show were turned down for lack of facilities. He also announced that the 1926 exposition will be held at the Municipal Pier, Chicago, during September. Much space is available.

treating and quenching magnet steel conditions should permit of the maximum amount of carbides in solution with the minimum amount of dissociation. Dr. A. E. White presided at the meeting.

S. N. Petrenko, bureau of standards, Washington, was the first speaker at the Tuesday afternoon session. He discussed "Comparative Slow Bend and Impact Notched Bar Tests on Some Metals." A number of analysis charts were projected to illustrate the results obtained by the author in conducting his tests.

"Application of the Mathematics of Probability to Experimental Data as a Basis for Appropriate Choice of Ferrous Materials" was the title of the paper prepared by Dr. B. D. Saklatwalla and H. T. Chandler, Vanadium Corp. of America, Bridgeville, Pa., and read by the latter. It was pointed out that there are several advantages in relying upon the probability curve in selecting source, type and treatment of steel, for the curve is constructed from actual experimental or service data. Charts and curves served to illustrate the method of preparing the data and the application of the graphs to proper choice of ferrous materials.

S. C. Spalding, Halcomb Steel Co., Syracuse, N. Y., author of "Effect of Reheating on Cold Drawn Bars," did not read this preprinted paper but presented his conclusions, making the statement that the test results showed that cold drawn material will behave under heat treatment as do hot rolled bars. He also described the changes in physical properties of the manganese, nickel and chromium-vanadium steels tested after cold drawing and reheating to 600 degrees Fahr., and to 1200 degrees Fahr.

The papers read at the Wednesday morning session illustrated the progress being made in the research of metallurgical content and the structure of steel. Many research men, eminent in this field, were present to discuss the papers.

Dr. J. A. Mathews, Crucible Steel Co. of American, New York, read his paper on "Retained Austenite—A Contribution to the Metallurgy of Magnetism." Dr. Mathews received a high compliment for his efforts to secure the suggestions and advice of other well known metallurgists in preparing his subject. The conclusions reached were based on both recent experiments and the author's experience of over 20 years. Excellent photomicrographs at 3000 enlargements illustrated the statement that in quenching with oil most alloy steels are more greatly magnetized than when hardened in water quenching.

"On Martensite," the paper of Dr. H. Hannemann, Technischen Hochschule, Charlottenburg, Germany, was read by Dr. S. L. Hoyt, General Electric Co., Schenectady, N. Y., and proved a worthy contribution to the subject of austenitic and martensitic structures and changes. A number of the statements made were vigorously challenged, particularly by Dr. Zay Jeffries, and should elicit answer from Dr. Hanemann soon.

Steel Session Marks A.S.S.T. Entry in New Field

OVER 350 members of the Society assembled Tuesday morning to listen to the discussion of the relative merits of steelmaking by the electric and acid and basic open-hearth furnace process. Dr. John A. Mathews, Crucible Steel Co. of America, New York, presided.

In speaking on the "Proportion of Heat Treated Steel to Total Production", C. J. Stark, editor, IRON TRADE REVIEW, stated that the automobile industry has proved itself the greatest patron of heat treatment of steel as it also has of alloy steel. He pointed out that last year this industry consumed approximately 3,200,000 gross tons of rolled steel and of this quantity probably 15 to 20 per cent was of alloy quality. On the general basis estimated, he continued, the automobile industry today is using 50 to 60 per cent of all the commercial alloy steel produced. He directed attention to the fact that the railroads are backward in adopting heat treating of their material largely because of the need of a scientific knowledge and skilled labor to properly meet their requirements. In closing the speaker said that from 3,000,000 to 3,500,000 tons of steel is being scientifically treated annually to serve various economic or mechanical purposes.

In speaking on "Acid Open-Hearth Steel", Radclyffe Furness, superintendent of the melting and forging department, Midvale Co., Philadelphia, pointed out that the walls and roof of an acid open hearth are built of silica brick and the hearth of silica sand of about 98 per cent silica. The silica bottom so happens to be the greatest contributing cause to the superiority of the acid open-hearth steel over the basic product.

In discussing acid practice the speaker emphasized the importance of the ore addition, pointing out that the greatest care should be used to add the exact amount at the proper rate in order to bring the carbon to the desired point when all the ore has been reduced and the resultant gas boiled off. This point the speaker termed as "condition" and mentioned that on the "condition" of the bath at this point depends the success or failure of the heat.

Discussion of Mr. Furness' paper was opened by W. H. White, naval gun factory, Washington. Mr. White's discussion was presented by Jerome Strauss, assistant chief metallurgist, United States naval gun factory. In the opinion of the author the superiority of acid open-hearth steel over basic open-hearth steel is due to the selection of high-grade scrap rather than to the sand bottom.

Edward Whitwarth, Bourne-Fuller Co., Cleveland, spoke on "Basic Open-Hearth Practice" citing in his opening remarks the history of the development of the basic steel making industry.

The author stated that in melting alloy steels and high-grade carbon forging steels for a charge of 210,000 pounds the limestone charge should be at least 21,000 pounds, the scrap charge 60 per cent of clean and as much heavy scrap as is available and 40 per cent of hot metal. With pig iron of 0.90 to 1.00 per cent silica and 1.75 per cent manganese and a fairly sharp working furnace using oil for fuel, the heat should melt close enough to the desired tapping point in carbon so that it will not be necessary to use an excessive amount of ore for recarburization.

There should be no addition of ore for at least 30 minutes to an hour before tapping so as to insure the absence of iron oxide in the bath. After the bath has been worked down in carbon to the go-ahead point and the slag is shaped up and the temperature about what is wanted by the melter, the addition of about 2500 pounds of 10 per cent silicon pig is made to the bath after the final preliminary test is sent to the laboratory for the determination of carbon, manganese and sulphur. From 20 to 30 minutes is required to get the analysis back to the open hearth, during which time the oxidation of the silicon, rather than carbon, takes

place allowing the melter to figure the bath the same as when the final test was sent to the laboratory. The use of ferrosilicon at this point is beneficial as a deoxidizer because its oxide seeks out the manganese oxide suspended in the metal, forming manganese silicate which is easily fusible at pouring temperature, causing it to coalesce and go into the slag readily while the manganese oxide is likely to remain suspended, causing defects in the metal when cold. The silicon also reacts with any carbon monoxide or ferrous oxide dissolved in the bath.

The final paper at the steel melting session entitled "Electric Furnace Steel" by F. T. Sisco, metallurgist, air service, war department, McCook field, Dayton, O., was presented in the absence of the author by Jerome Strauss, assistant chief metallurgist, United States naval gun factory, Washington. The author discussed the outstanding advantages of the electric process and cited the general divisions of electric steel manufacture. Following a description of the three types of electric furnaces used in the production of steel he discussed the process of melting, the chemistry of oxidation, the control of oxidation in melting, slagging off and recarburization, slag deoxidation and various other factors in the practice. He emphasized the importance of correct pouring practice in the production of high-grade steel ingots.

Grinding Is Topic at Machine Shop Meeting

AN EXCEPTIONALLY good attendance marked the machine shop practice session held Thursday afternoon under the auspices of the American Society of Mechanical Engineers. H. J. Spencer, Blanchard Machine Co., Cambridge, Mass., spoke on modern surface grinding. He outlined recent developments in surface grinding machines using a cylinder type of wheel, the development being considered along two different lines. One of these has extended the scope of the process to the finishing of large pieces, while the other has greatly reduced the cost of surface grinding in small parts. Mr. Spencer described a modern vertical spindle surface grinder said to be one of the largest ever built. Its total weight is over 20 tons while the wheel head alone weighs 3½ tons and carries either a 60 horsepower or an 80 horsepower directly connected motor. The work is placed on a rotary clutch and held magnetically in a fixture. A number of illustrations were then thrown on the screen showing the machine adapted to various classes of work. It was pointed out that this machine would finish work within a limit of 0.001-inch and that this accuracy could be maintained on a production operation when finishing large pieces. Mr. Spencer also illustrated and described an automatic surface grinding machine which finishes one surface in one pass under the wheel.

Allan A. Wood, assistant sales manager of the Diamond Machine Co., Providence, R. I., commented interestingly on Mr. Spencer's paper. By means of stereopticon slides he showed just how chips were produced and rolled under the face of the grinding wheel and stated that wheels of the segmental type aided materially in carrying the chips away, thus reducing friction and lessening the horsepower required to operate a grinding machine on a given class of work. A number of graphs were shown which illustrated how the power decreased under favorable conditions. He pointed out that recessed pieces were much easier to handle than those with solid faces.

F. A. Keller of the Keller Machanical Engineering Corp., Brooklyn, N. Y., described the use of machinery in making dies for sheet metal work and forging. He showed a number of illustrations of mechanical die making machines and traced the development progress of these units.

Theory and practice of centerless grinding was discussed by W. J. Peets, Singer Mfg. Co., Elizabethport, N. J. He pointed out that the centerless grinder is particularly adapted for cylindrical ground work.

Suggest Co-ordination of Hardness Numbers

HARDNESS testing, its applications and possibilities, formed the chief topic of discussion at the symposium of hardness testing held Thursday afternoon. A. E. Bellis presided as chairman.

S. N. Petrenko, bureau of standards, Washington, presented a paper, "Elastic Ring for Verification of Brinell Hardness Testing Machines." He stated that the question of minimizing errors in brinell testing was worthy of serious consideration. One of the worst errors in brinell testing is the use of wrong machines. If the brinell machine shows too large a load error, the machine should be readjusted. The error of the machine should be much less than the variable of the material to be tested, stated Mr. Petrenko.

In the discussion H. F. Moore stated that for the brinell machine, the terms of accuracy of three per cent no longer is used, but that the American Society for Testing Materials calibration or testing machine now speaks of the loading range as being not less nor more than 15 per cent, instead of considering zero the fixed factor as before.

"Some Comparisons between Rockwell and Brinell Hardness," was the topic of the paper by R. C. Brumfield, Cooper Union, New York. The tests described by Mr. Brumfield involved the use of 1/16-inch standard balls, ⅛-inch standard balls, and a diamond cone. Rockwell hardness numbers for all three types have been plotted against the three by brinell use, giving comparisons and a translation has been evolved therefrom for the Rockwell and brinell interchangeably.

"We have taken cross sections of Rockwell penetrator impressions to determine whether the penetration is the same shape as expected," said Mr. Brumfield. Depth of penetration measure is as accurate as the diameter of the impression. In the use of the diamond cone, that for the hardest numbers was 65, and the cone flattened from 120 to 127 degrees, enough to cause the Rockwell reading to be five points higher than normal. Determined by the brinell reading this would be 85 points higher than it would have been had the cone not flattened. Because the Rockwell machine is more consistent on the harder metals is no reason that the Rockwell is any more consistent altogether. The apparent greater consistency on harder metals is apt to be misleading.

"Hardness and Toughness of High Speed Steel as Affected by the Heat Treatment," was discussed by R. K.

Barry, Barry Co., Muscatine, Iowa, in his paper. For these tests, 50 bundles of steel pieces, with four pieces to a bundle were used. Twenty of these had a deflection of less than 0.0001 for each piece in the bundle. A slight overtime in quenching is preferred to undertime, said Mr. Barry. It is almost impossible to harden high speed steel so that it will reharden satisfactorily as it was hardened in the first instance, concluded Mr. Barry.

H. P. Hollnagel, General Electric Co., West Lynn, Mass., spoke on "Stress-Strain Curve and the Characteristics which are Associated with Hardness." Hardness before has not been given physical dimensions, declared Mr. Hollnagel, but under the stress and strain curve the average hardness of properties can be determined. He illustrated his talk with stereopticon slides showing the various stress-strain curves which he has worked out. The elastic limit measures only the surface hardness, he said. When you test material that has been strained and has had deformation and permanent set, that must be considered in determining its hardness.

"Rockwell, brinell, scratch and methods of determining hardness all give us the unit volume for the unit stress and strain. I think that the various hardness numbers can be corrolated," said Mr. Hollnagel. The size of the specimen should not trouble us, for as the size goes down the stress goes up and the curve will take care of this.

Dr. Albert Sauveur, honorary member of the American Society for Steel Treating and professor of metallurgy at Harvard university, Cambridge, Mass., had thrown on the screen a stereopticon illustration of his durometer, which he described in his paper, "The Durometer—An Instrument for Testing Hardness." A steel ball is dropped from a determined height, is deflected from the face of the material to be tested and falls to a surface which registers the point of contact. This is scaled, so that the hardness can be determined. The details of the operation, such as the type of ball, the height of fall, where the specimen was to be struck and reading the scale, were explaind by Dr. Sauveur.

"English Hardness Testing Machine of the Brinell Principle," was described by O. W. Boston, University of Michigan, Ann Arbor, Mich. He described a machine made in England which incorporates the brinell principle, but is more automatic and considerably more permanent in build. "The machine is on the brinell principle, only enclosed, and with certain mechanical features," said Mr. Boston.

Problems of Carburizing Are Investigated

IRREGULARITY in carburizing results can in practically all cases be traced back to the omission of a necessary step or a short cut in conducting the process and steel made by ordinary steelmaking methods will respond satisfactorily to cementation." This fact was brought out by W. J. Merten, metallurgical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., at the Wednesday afternoon technical session. Before discussing the cause and prevention of irregular carburization of iron and iron alloys the author reviewed the details of the carburizing process as conducted today. The speaker pointed out that the concentration of carbide in and roughening of the surface of a die insert made of soft steel is entirely avoided and a deep, uniform case produced by normalizing the steel before cold pressing, again normalizing after cold pressing and before carburizing, proving that the structural conditions are an important factor in the production of a smooth and uniform cementation of finished parts.

Evidence that the amorphous metal hypothesis does not hold when dendritic crystals in over-heated high-carbon steel are large and there are correspondingly large surfaces of cement was presented in a paper on a "Study of Dendritic Structure and Crystal Formation" prepared jointly by Bradley Stoughton, professor of metallurgy and F. J. G. Duck, instructor in metallurgy, Lehigh university, Bethlehem, Pa.

Different troubles, which are experienced with many types of industrial furnaces in use is enormous M. H. Mawhinney, General Furnace Co., Philadelphia, stated in presenting his paper on "Oil Burning Equipment for Industrial Furnaces."

The findings of an investigation of the carbon concentration of point "C" conducted by Anson Hayes professor of physical chemistry and metallography, Iowa State college, Ames, Iowa, and H. U. Wakefield, associated with Dr. Hayes were presented by the latter. The authors reviewed a modification of the diagram for pure iron-carbon alloys constructed to conform to experimental data and the paper resulted in lengthy discussion.

A simple hollow cylinder when subjected to an interior pressure does not have the stresses within its walls efficiently distributed, members of the society were told at the Thursday morning session by Dr. F. C. Langenberg, director of laboratories, Watertown arsenal, Watertown, Mass., in presenting his paper on "Effect of Cold Working on Hollow Cylinders." An element of a given thickness in the outer portion of such a cylinder is under a low stress while at some times being of greater weight than an inner element of the same thickness which carries a high stress, he stated.

Tool steels, frequently called finishing steels, and containing about 3 per cent tungsten and somewhere over 1 per cent carbon, were discussed in the early part of the session by M. A. Grossmann, metallurgist, United Alloy Steel Corp., Can-

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500 Enjoy Banquet

ABOUT 500 attended the banquet at the Cleveland hotel on Thursday night. George M. Graham, vice president, Chandler Motor Car Co., Cleveland, was toastmaster. Speaking on "City Governments," W. R. Hopkins, city manager of Cleveland, made the principal address of the evening. This was followed by the conferring of an honorary membership in the society on Dr. Charles F. Brush, of Cleveland, this formality being performed by Dr. Zay Jeffries. W. S. Bidle, president of the society announced that the board of directors had honored Arthur G. Henry of Chicago with a founder membership, the presentation to be made at the Chicago convention next year. The Henry Marion Howe Medal for the best technical paper presented during the year was awarded to Dr. H. H. Lester, research physicist, Watertown Arsenal, Watertown, Mass. The winning paper was "X-ray Tests Applied to the Problem of the Steel Foundry." Mrs. H. M. Howe, widow of Dr. Howe, was present for this ceremony. C. M. Newcomb, a humorist of Lakewood, O., gave an entertaining talk on "The Psychology of Laughter." The program was concluded with a few words by W. H. Eisenman, secretary of the society.

Electrical Equipment Is Studied

Progress Made in Heating Methods, and Power Generation and Control Discussed by Engineers in Convention—Exposition Covers Wide Range of Applications in Steel Industry

INTENSIVE study in the application of electricity to iron and steel processes was reflected in papers presented at the twentieth annual convention of the Association of Iron and Steel Electrical Engineers in Philadelphia, Sept. 14-19. Discussion touched upon virtually every process where heat is required. This interest also was manifested in the character of the exhibit held at the Commercial museum. More than 150 manufacturers were represented, and the equipment displayed covered a range from heavy power machinery, conveying equipment of various descriptions, heating furnaces and switchboard installations, to electric portable tools and numerous kinds of supplies. Registration at the association headquarters at the Benjamin Franklin hotel was 500.

Advances in Electrical Appliances Described

AN IMPORTANT commercial development in the electric furnace field is the high frequency furnace, according to J. A. Seede, General Electric Co., Schenectady, N. Y., in a paper entitled "Electric Melting Furnaces." This furnace, he declared, offered many possibilities not only in the melting of nonferrous metals and alloys, but in the manufacture of relatively small quantities of high-grade steel. One advantage claimed for it is that it does away with the necessity of holding the furnace up to a temperature by holding back part of the charge between heats. This furnace also has possibilities in the application of heating metal rods and tubes.

Another interesting step, the speaker stated, is in the heating of ingot tops by an electric arc, as now demonstrated by the International Nickel Co., New York. By this method, Mr. Seede declared, the recovery of metal in the ingot has been increased at least 10 per cent. Later, Mr. Watson of the Nickel company gave a description of the equipment, stating that it was comprised of standard parts mounted on a truck and had a 3-inch carbon electrode. About five minutes are usually required for the operation with 2000 to 3000 amperes used for two minutes and around 800 to 1000 for the remaining three. He declared that 85 per cent of the ingots which are of alloy metal do not have to be sawed, and with the utmost care the percentage could be further increased. Not having an occasion to employ the arc on steel ingots, he stated he had no data on such application.

E. A. Hurme, Westinghouse Electric & Mfg. Co., Pittsburgh, discussed various processes in the iron and steel industry where heat is required in an effort to determine the possibilities for electrification. He discussed the electrically heated soaking pit, as developed by the Donner Steel Co., Buffalo, expressing the opinion that the advancement was encouraging. Referring to the reheating furnace for rail, structural and sheet bar mills he stated that to date there have been no electrically heated furnaces of this type, and as the temperature required is about 2500 degrees Fahr., a furnace similar to the electric soaking pit would be required. He stated that there is a difference, however, between the soaking pit and the reheating furnace which, under present conditions, seemingly would make electricity uneconomical for the latter.

Highly finished sheets should provide a generally accepted application for the electric furnace. Incidentally the speaker thought attention should be directed to the question of operating the steam boiler used in the pickling processes by electricity.

Emphasis was placed by some of the speakers upon the saving in overall production. Even where the fuel costs were unfavorable to electricity, the use of this factor often proves economical in figuring up the ultimate cost of a product. As an instance in point, full finished sheets were cited. It was stated that rejections would be fewer, and with a difference of approximately $10 a ton in the selling price between first and second grades, the item was important. One speaker stated that a recent survey of a number of mills using fuel-heated furnaces indicated they were not getting more than 70 per cent first grade.

Another speaker, Mr. Knapp, of the General Electric Co., stressed the question of improved working conditions. The substitution of electricity for fuel does away with gases and fumes, noise of oil burners, excessive heat, etc. These features, he stated, are intangible, but worthy of consideration.

Another speaker during the discussion stated that the Ford Motor Co. was installing $1,500,000 of heat treating and controller adjustment.

A producer of sheets and tin plate stated that he had experimented with the electric furnace in the produc-

Electrical Engineers' New Officers

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*Re-elected.
**Elected previously.

tion of tin plate, but found it unsatisfactory. He believed that the use of the electric furnace on the ordinary run of steel cannot be justified.

In a paper prepared by Ralph A. Butler, Donner Steel Co., Buffalo, experiences were narrated regarding the installation and operation of the experimental electric soaking pit at the Donner plant, the first to be tried out in this country and which is understood to have proved successful. The speaker declared that the costs of operation and maintenance were higher than the ordinary costs of heating, but that there were many extenuating circumstances. He stated that were this pit to be built over, the costs of maintenance could be cut down to at least one-third the costs that actually did develop. His remarks were supplemented by Mr. Bailey, the designer, who declared that the pit had a thermal efficiency of at least 50 per cent.

W. P. Chandler, chairman of the combustion engineering section of the association, suggested that one of the proofs of the electric soaking pit would lie in the chipping, and that data should be compiled covering this phase.

In the report of the electric heat committee, it declared that each application of a heat treating furnace is a special and separate problem, and that no one particular form of fuel or energy will meet every furnace problem.

"The Selection and Maintenance of Oil Circuit Breakers" was the subject of papers presented by George A. Burham, Conduit Electrical Mfg. Co., Boston, and M. J. Wohlgemuth and E. K. Reed, Westinghouse Electric & Mfg. Co., East Pittsburgh. "Direct Current Armature Winding for Multi-Polar Generators and Motors—Frogley Windings," was the subject of a paper prepared by W. H. Powell and G. M. Albrecht, Allis-Chalmers Mfg. Co., Milwaukee. "How the Electrical Engineer and the Safety Engineer Can Be Mutually Helpful," was discussed by John A. Oartel, Carnegie Steel Co., Pittsburgh.

New Developments in Equipment Are Displayed

EQUIPMENT exhibited at the society's annual exposition attracted much attention. More than 150 manufacturers were represented. A feature of the display of the Westinghouse Electric & Mfg. Co,. Pittsburgh, was a direct current motor for general mill service, with a section cut away to show details of construction and insulation. To demonstrate its commutation features, a motor of this type was coupled and electrically connected with another kind also designed for mill service, for a load back test. The company also demonstrated a magnetic control, with a newly designed brake. A static condenser unit for power factor correction was shown in operation; also carbon circuit breakers of various capacities and a 200 ampere arc welding unit.

The General Electric Co., Schenectady, N. Y., exhibited a new mill type controller, with a 3-point switch and unit box resistor; also a mill type motor with solenoid operated brake, and a magnetic switch, with cast iron cover, for throwing the motor across the line. Other features included new direct current general purpose motors; a new crane motor; a direct current drum controller; a truck type panel, with a solenoid operated alternating current circuit breaker; and a 2000-ampere, 15,000-volt oil circuit breaker.

A new type of machine for testing the ductility of sheet metal was shown by the Tinius Olsen Testing Machine Co., Philadelphia. With this machine the method of weighting is accomplished by the elongation of a rod, proportional to the load applied, instead of by the former method of using a diaphragm in conjunction with the gage. The Acme Electric Welder Co., Los Angeles, featured a water cooled electrode, with an adjustable lower horn and reversible electrode positions.

Several developments designed to increase the safety factor were incorporated in the equipment displayed by the Electric Controller & Mfg. Co., Cleveland. A safety limit stop for hoist motors up to and including 30 horsepower, 230 to 550 volts, was shown. The switch is operated by a single weight and provides a quick stop by means of dynamic braking when the limit stop trips. This occurs regardless of the position of the controller handle. A 2300-volt, automatic compensator also was exhibited. This was developed to permit the use of 2300 volts within plants, thus eliminating copper losses with danger to the operator. All heavy volt circuits are in a boiler plate tank, arranged with conduit connections, with a self-contained oil immersed transformer, giving low voltage to the master switches which are handled by the operator. The company also featured oil immersed push-button operated starting switches for induction motors.

The National Electric Mfg. Co., Pittsburgh, exhibited an electric hammer. It is said to be capable of striking 3600 blows a minute, with the operating force derived from an application of electro-magnets. The Allis-Chalmers Mfg. Co., Milwaukee, displayed a frog leg winding for direct current machines, a description of which was given in detail at one of the technical sessions. The company also displayed a new squirrel cage induction motor, equipped with taper roller bearings.

A new lifting magnet controller and a line of lifting magnets were exhibited by the Ohio Electric & Controller Co., Cleveland. A recently developed type of resistor was featured by the Monitor Controller Co., Baltimore. The controller consists of a nickel copper ribbon wound on edge and then mounted on a steel reinforced support.

The Mutual Foundry & Machine Co., Atlanta, Ga.; the Gehnrich Indirect Heat Oven Co., Long Island City, N. Y.; and John C. Dolph Co., Philadelphia, co-operated in demonstrating equipment for electrical maintenance departments. The General Furnace Co., Philadelphia, exhibited an electric roller hearth furnace, embodying new features, and electric furnaces of the box and cylindrical types.

Steel River Shipments Gain in August

Pittsburgh, Sept. 22.—Shipments over the Ohio valley rivers gained in August over July. Shipments over the Alleghany river totaled 405,495 tons, over the Monongahela, 1,938,145 tons, and over the Ohio, 716,142 tons. Steel shipments totaled 29,010 tons over the Monongahela and 42,004 tons over the Ohio. Following are further comparisons of shipments:

	Allegheny river	Monongahela river	Ohio river
August	.....	29,010	42,004
July	.....	23,960	35,835
June	132	30,000	27,791
May	735	32,479	42,466
April	797	23,350	18,375
March	200	22,328	27,000
February	900	19,350	19,837
January, 1925	.....	23,804	17,825
December	1,103	31,720	29,562
November	7,369	26,402	19,033
October	5	14,600	12,700
Totals—1923	1,064	291,689	190,336
Total—1925 to July 1	2,764	151,311	153,294
Totals—1924	56,720	266,074	216,138

Discuss Many Technical Topics

Speakers at Society of Automotive Engineers Production Sessions in Cleveland, Sept. 14-16 Cover Airplanes, Employes, Steel, Foremen and Other Subjects—Program Offered in Co-operation With American Society for Steel Treating

SUBJECTS of discussion at the production meeting of the Society of Automotive Engineers, Cleveland, Sept. 14-16, were of wide application. Mrs. Lillian M. Gilbreth spoke on "Training Employes in Production Work," while such detailed topics as gear development, jigs and fixtures were discussed by other speakers. Six sessions were held, two each day of the convention. Two of these dealt with machine tools. Unusual interest was shown in these discussions. Co-operation of the machine tool builders with the automotive engineers brought out constructive ideas in the machine tool sessions that proved popular. Improvements and betterments in machine tool construction were suggested by automotive manufacturers while E. F. DuBrul, general manager National Machine Tool Builders association, presented the situation from the equipment builder's side. Meetings on gear production, training, sheet steel and inspection also were held. A production dinner Sept. 15 was followed by a smoker and frolic which had been arranged by members of the American Society for Steel Treating.

Machine Tool Meetings Draw Much Interest

AFTER a morning consumed in registration, several hundred members and guests of the production section of the Society of Automotive Engineers were ready for the opening of their three-day technical program.

Closer co-operation between the workers and officers, and greater stress being laid upon the so-called "human equation" in industry—these were the keynotes of the papers read at the training session.

Chairman John Younger, Editor, *Automotive Abstracts*, introduced the speakers, chief of whom was Mrs. Lillian M. Gilbreth of Gilbreth, Inc., well known for her work in industrial training. Her paper "Training of Employes in Production Work" warned against the adoption of self-contained and pedantic training programs which do not aim chiefly toward co-operation with those to be trained.

"Products and By-Products of Foremen's Conferences," the paper read by F. T. Jones, White Motor Co., stressed greatly the importance of conducting foremen's conferences in such a way as not to antagonize the men or arouse their suspicions that something is being "put over" on them. In addition to a number of detailed charts outlining suggestions for conference topics, Mr. Jones listed the direct and indirect results possible by efficient and co-operative training of foremen.

The paper of Louis Futhenburg, Yellow Sleeve Valve Engine Works Inc., on the subject of "The Training of Shop Foremen," dealt especially with the personal factors equation which must be considered in effecting satisfactory methods of foremen training. The foreman was spoken of as a business manager rather than a master craftsman, this leading to better understanding of his problems by his supervisors.

At the sheet steel session, G. F. Keyes, Mullins Body Corp. presented a paper on "Hot Stampings," pointing out that the process is considerably more complicated than cold drawing stamping and does not fit in with large production. When small production is desired, the author explained, or where it is necessary to get into production quickly, the hot stamping process is the one to use because it is possible to make the most difficult stamping in a short length of time and the cost of tools is much less than the cold drawn tools.

Points Out Sheet Metal Saving

In a paper on "Sheet Steel Fabrication" prepared by Syd Smith, in charge of sheet steel operations, Studebaker Corp. of America and presented in his absence by R. I. Mowery, chief inspector at the South Bend, Ind. plant, sheet steel division, the author pointed out that from 25 to 30 per cent of the weight of an average passenger automobile is produced by the sheet or strip steel used in its construction, and as approximately 60 per cent of the cost of a piece is in the stock, the opportunity to reduce costs by conserving the stock is apparent. He explained a card index file which quickly gives information as to the possibility of making any new piece from scrap material and explained that small pieces of scrap are welded together into such regular shaped and sized sheets of stock as would be suitable for parts like dust pans, seat pans and regular boards.

The subject which appealed mostly to the members who attended the gear production session was in connection with the problems arising in cyanide treatment of gears and the question of gear tooth surfaces. The discussions which followed the papers indicated that the subject of noise and wear and the grinding of gears and its effect on length of gear life is being given a growing amount of study by the engineers of the industry.

Chief among the papers read was that of P. L. Tenney, Muncie Products division of General Motors Corp., on the subject of "Co-ordinating Designs and Production Methods in Gear Development." The author quoted at length from the corporation's gear casting experiences and their tests to overcome difficulties, particularly with noise and wear. The days were recalled when alloy gears were in the process of experiment and dropping on the floor meant a broken gear.

Under the subject of "The Problem of Gear Production," Earle Buckingham, Niles-Bement-Pond Co., New York, discussed the questions arising in the machining of gears. It is pointed out that there is great need for the development of practical measurement devices which are both simple and rapid and more suitable in production work than delicate laboratory instruments.

Col. H. W. Alden, Timken-Detroit Axle Co., and some time president of the society, presided at the gear session.

In his opening remarks at the machine tool session, Eugene Bouton stressed the fact that a great need for

co-operation existed between automotive manufacturers and machine tool builders. "Insistent demands for reduced production costs," he said, "made adequate tools imperative, and these could only be had through a close study of existing needs."

R. M. Hidey of the White Motor Co., Cleveland, gave an interesting talk on machine tool needs in the automotive industry. He said that present day requirements were not being taken care of as they should be. He sketched the history of machine tool building from the time of the steam engine to the present day, emphasizing the fact that the automotive industry had done more for the development of the machine tool business than any other factor. "Demand for cheap transportation," he said, "made efficiency in automotive manufacturing imperative and this could only be had through the use of adequate tools."

A. C. Cook, vice president of the Warner & Swasey Co., Cleveland, commented at length on Mr. Hidey's remarks. He said that the machine tool industry was in an excellent position to learn from its customers, as a customer had the best chance to test machines. Ernest F. DuBrul, general manager of the National Machine Tool Builders' association, also made some interesting comments on Mr. Hidey's paper. "At the present time," he stated, "machine tool dealers were co-operating fully with each other and having an excellent intetrchange of ideas." "Co-operation," he said, "will reduce research work and make machine tool manufacturing more economical."

W. C. Careins of the Ajax Motor Co., Racine, Wis., delivered an interesting paper on machine tool selection. He stated that the selection of machine tools was largely a matter of judgment, determined by the proper consideration of a large number of variable factors. "Users of machine tools," he said, "are divided into three classes, namely: Job work, in which there is practically no duplication of production; semi-production shops, in which there is more or less duplication of parts, the production being subject to many changes of design and product; and finally, the manufacturing plant engaged in extensive production of a standard product."

R. M. Anderson of the Holley Carburetor Co., delivered an interesting talk on drill press application. He cited numerous instances showing how modern drilling methods reduced production cost.

Machine tools and their relation to the progress and work of the automotive industries were discussed at the morning session, Sept. 16, presided over by Mr. Younger.

J. Gustaf Moohl of the Cleveland Automobile Co., presented a paper on "Jigs and Fixtures in Automotive Production." He stated that by slight changes, patterns could be used for different jigs at an appreciable saving. In adopting a single type of liner bushing, more savings could be effected.

Executive co-operation between the engineering department and tool room engineers is necessary to adopt new practices, cutting down costs. He showed that the design of a fixture is as important as that of the machine.

"Making Machine Tools Safe," was the topic of the paper presented by R. F. Thalner of the Buick Motor Co., Flint, Mich. Safety is part of our industrial life, and accident prevention one of the greatest movements of all times, Mr. Thalner said. Accident expense is not necessary. It is estimated that the safety movement in the United States has saved 100,000 persons. The United States Steel Corp. in the period of 1906 to 1923 estimates that 393,474 employes have been saved from injury.

In concluding, Mr. Thalner said that most machine tools can be made safe by proper design or guarding.

Mr. DuBrul, in the discussion stated that the difficulty confronting the machine tool builder is to get uniform safety codes in the different states. Guards required by some states are absolutely prohibited in others. The safety movement is not only humanitarian, but is economical said Mr. DuBrul. "We must get uniform safety codes, and factory inspection must be taken out of politics. We must have not the man with a union card and political pull but safety engineers for factory inspectors," he said.

Due to the absence of A. R. Kelso of the Continental Motors Corp., Chairman Younger read the paper, dealing with "Analysis of Machine Tool Maintenance." Maintenance of machine tools is important, repairs being made too often and requiring too much time, according to the paper. The tendency for machine tool manufacturers is to come out with new features rather than to concentrate on correction or elimination of inefficiencies, according to Mr. Kelso's report.

Mr. DuBrul approved the collection of such statistics stating that when a machine tool user collects facts like those he can place his finger on faults and give reasons. Mr. DuBrul favors adoption of some system for scoring or grading machines by various factors, remarking that too many machine tool sales are being made on hunches, impressions, and prejudices without engineering basis to back them.

If the trend pointed to in the inspection session is followed out in the direction indicated, there should in all probability be considerable developed shortly on the subject of elimination of gear noise.

"Inspection Methods," the paper of C. J. Ross, Buick Motor Co., and read by R. B. Schenck, proved of great interest to the 50 or so members attending the meeting. This paper dealt with the ratio of productive hours allowed to the inspection hour in this particular plant, and showed the inspection methods developed there in accomplishing these ratios.

J. J. Feely, Glenn L. Martin Co., delivered the second paper, on "Some Aspects of Inspection in the Airplane Industry," preceding his data with descriptions of the main parts in the airplane and the function of each, for the benefit of those unfamiliar with the airplane.

An unexpected and what may prove to be an important outcome of the inspection session came with the discussion of Dr. Ancel St. John, of "Inspection Methods," the paper prepared by C. J. Ross, Buick Motor Co. Dr. St. John, who is a consulting physicist in New York, expressed great interest in the subject of testing gears for noise and consequent wear, and indicated that it was his intention of further investigating the subject with a possible view of developing some apparatus which would accurately, cheaply and quickly permit of the testing of gear wear through the noise factor.

Many Attend Dinner

QUALITY, quantity and costs formed the theme of the address by K. T. Keller, vice president and general manager of General Motors of Canada, Ltd., the main speaker at the production banquet of the society, Sept. 15. The banquet aroused considerable interest among the members and was well attended. Quality is a matter of discipline, according to Mr. Keller, while the keynote of the quantity discussion was that any product should be manufactured as wanted. Cost is a field yet untouched by most executives and more study should be given it. Loyalty and training of apprentices also was stressed by Mr. Keller.

Steel Treaters Meeting Big Success

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ton, O. The subject of the paper was "On the Nature of Some Low Tungsten Tool Steels," and was prepared jointly by Mr. Grossmann and E. C. Bain, metallurgist Union Carbide and Carbon Research laboratories, Long Island City, N. Y.

In quenching steel spheres, rounds and plates the cooling velocity for any one of these shapes is inversely proportional to some power of the diameter of thickness greater than 1 and less than 2. This fact was brought out by H. J. French, physicist, bureau of standards, Washington, in a paper on the "Initial Temperature and Mass Effects in Quenching." The paper was prepared jointly by Mr. French and O. Z. Klopsch, assistant scientist, bureau of standards, Washington.

The technical session held in the Cleveland hotel Friday morning was classed by Chairman Bradley Stoughton as having great practical interest. Three papers were read, the first being by W. E. Day Jr., International Motor Co., New Brunswick, N. J., on "Carburization by Solid Cements." The author discussed the mechanism of carburization under the use of solid compounds, dividing the subject into three phases: relation to the production of carbonizing gases, relation of the gas action on the steel, and the nature of the fusion of carbon and steel.

"The Dilatometric Method of Heat Treatment," by O. E. Harder and R. L. Dowdell, University of Minnesota, Minneapolis, and A. C. Forsyth, Bethlehem Steel Co., Bethlehem, Pa., revealed the fact that wide interest is being displayed by metallurgists in this new method of heat treatment. The author described in some detail, illustrating with photographs, the construction of and results obtained with this new instrument. Many interesting and newly discovered facts came to light in the lengthy discussion following this presentation.

The presentation by Prof. H. F. Moore of his paper, "What Happens When Metal Fails by 'Fatigue'?" received high commendation for the lucid yet extremely simple manner in which were called to mind several factors in connection with metal stresses which are frequently overlooked. The author stated that in the efforts so often made to place the blame for metal failure upon the steel itself, many engineers totally ignore the thousands of minute local stresses which may have caused the breakage.

Various factors which cause metal to warp and crack when subjected to heat were explained at the final afternoon session by J. F. Keller, in charge of university extension work, Purdue university, Lafayette, Ind. The author, who has had considerable to do with lecture courses on heat treating at various Indiana shops, presented the subject from a shop standpoint so that the average engineer, production manager, superintendent, foreman or operator was able to visualize the causes for deformation.

A simple device was used by the speaker to demonstrate the change which steel undergoes when heat treated. An electric current was passed through a piece of piano wire, one end of which was anchored and the other end running over a pulley mounted on the one end of an indicating arm. This end of the piano wire was held under tension by a rubber band. With the first application of heat, the wire expanded in length, causing the arm to move to the right and in proportion with the increase of temperature. This apparatus aids in showing the action at temperatures where transformation takes effect.

Pot failures usually are due to firing at too fast a rate, according to Sam Tour, Doehler Die Casting Co., Batavia, N. Y., who spoke on the "Design and Operation of Furnaces for Salt Baths".

The final paper on "Welding Steel Tubing and Sheet with Chromium-Molybdenum Welding Wire" was prepared by F. T. Sisco, metallurgist and H. W. Boulton, test engineer, engineering division, air service, war department, McCook Field, Dayton, O. The paper was presented in abstract form by R. T. Bayless. Heat treatment of welded chromium-molybdenum steel tubes and chromium-vanadium steel sheet serves to eliminate the soft area present near the weld in the untreated tubes and in general serves to equalize the structure at the weld and to produce a fine grained uniform material, the authors contended.

British Institute Gets American Ideas

(*Concluded from Page* 778)

E. C. Evans, London, pointed out the special difficulties which arise through the very large content of ash in Indian coal. Some of the coal ran easily up to 25 per cent of ash, and possibly the combustible material would not exceed 50 to 60 per cent. In regard to toughness he considered the Indian coke was equal to that obtained in Derbyshire, although he doubted if it was more combustible.

James Henderson, of Scawby, Lincolnshire, thought the paper emphasized the necessity of great improvement in many British plants and fairly indicated the lines which might be followed.

D. Sellars, representing Bolckow, Vaughan & Co., Middlesbrough, thought it a great misfortune that British furnaces were so seldom blown out and relined. He believed that had a great deal to do with defective production. Insufficient attention was given to the position of the bosh in furnace construction and in some cases it was advantageous to shorten the bosh and widen the hearth.

R. Mather, metallurgical inspector of Jamsheddpur, congratulated Mr. Keenan on the remarkable achievement of getting basic pig iron so successfully from pure hematite. He thought that was due to the large amount of phosphors in the coal. Examining the results he found that the Indian establishment had produced daily 560 tons of pig iron per furnace.

A paper was given by Prof. C. A. Edwards, D.Sc., and L. B. Pfeil, M.Sc., on "The Tensile Properties of Single Iron Crystals and the Influence of Crystal Size Upon the Tensile Properties of Iron." A short paper in conjunction with this was presented by Miss C. F. Elam, M.A., on "The Orientation of Crystals".

An interesting contribution following a paper by R. H. Greaves and J. H. Jones, of Woolwich Research Department, on "The Effect of Temperature on the Behaviour of Iron and Steel in the Notched Bar Impact Test" came from Sir Robert Hadfield recalling some experiments he had made on the behavior of steels under temperature. His experience was that nearly all special steels were embrittled by low temperatures. The only exception was one steel which contained austenite.

Concluding the proceedings, a resume of a paper was given by D. F. Campbell on "High Frequency Induction Furnaces", and the speaker announced that by means of the high frequency furnace the Telegraph Construction and Maintenance Co., Ltd., London, had prepared nickel iron alloys for the manufacture of submarine cables. An alloy had been brought out which had a magnetic permeability of 7000. It was being manufactured within 15 miles of Birmingham.

Industrial Men in the Day's News

Harry F. Wahr, New President of Mesta Machine Co.

HIS entire business career has embraced successively greater responsibilities in his present organization.

FINISHING his schooling at an exceptionally early age, he arrives at a responsible position as leader of his comany at 41.

AN ENTHUSIASTIC sportsman, hunting, fishing, golfing and trap shooting comprise his hobbies and diversions.

DEVOTED interest in his business duties has always been a predominating characteristic of Harry W. Wahr, who on Sept. 15, was elected president of the Mesta Machine Co., Pittsburgh, with its extensive plant located at West Homestead, Pa. Mr. Wahr assumes the duties as chief executive of the company at the comparatively early age of 41. And contributing to this is the fact that he had completed his education at an age when many youths are just entering college. He started to school at the age of 5, graduating from Knox school when 13, attended Park institute, Pittsburgh, for a period, and then started at Western University of Pennsylvania, now the University of Pittsburgh, with the degree of mechanical engineer, at the age of 19, being one of the youngest students to graduate from this institution.

Mr. Wahr's entire business career has been identified with the Mesta Machine Co. While still attending the university his vacation periods were spent at its plant, assisting the late Frederick E. Mesta, who at that time was supervising the construction of the plant and who later became its first general superintendent. Mr. Wahr finished his schooling shortly after the plant was completed and his early duties with the company were with the engineering and metallurgical departments, followed by other activities.

His executive ability was recognized early and in 1908 he was made assistant sales manager and had direct charge of estimating. From this position he was promoted to sales manager, and in 1911 also was made assistant secretary. In 1912 he was elected secretary and was given a place on the board of directors, still retaining the sales managership. During the war, he successfully steered the selling ship of the Mesta company in the handling of many large government contracts, as well as other business done by the company.

When George Mesta died on April 22, 1925, necessitating a reorganization, the logical candidate for the vice presidency made vacant by the promotion of Frederick E. Mesta to the presidency, was Mr. Wahr. When on Aug. 31, of this year death again suddenly visited the Mesta organization, taking its president for the second time, and another reorganization became necessary, Mr. Wahr's election to the president's chair followed.

His long association with the company has ably fitted him to fill the position as chief executive. The business policies of the Mesta Machine Co., as established by his predecessors, George Mesta, its founder, and the late Frederick E. Mesta which made the institution so successful in its field, will be continued.

As his associates, in the vice presidency, he will have J. O. Horning, who has been treasurer since the company was organized and who will continue to discharge the treasurer's duties, and L. Iversen, who will continue to serve as chief engineer. At the reorganization held Sept. 15, in addition to the above, John Edwards was elected assistant treasurer. Mr. Edwards has been associated with the company for 18 years. Mrs. Pearl R. Mesta, widow of the late George Mesta, was elected to fill the vacancy on the board caused by the death of Frederick E. Mesta.

The directors of the company are Mr. Wahr, Mr. Horning, Mrs. Mesta, W. J. Hirth and G. E. Townsend.

In private life, Mr. Wahr is an enthusiastic sportsman and among his hobbies might be mentioned hunting, fishing and trap shooting. He is also a golf enthusiast, being a member of the South Hills Country club, and also a member of the Pittsburgh Athletic association.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

JESSE L. JONES, in charge of the chemical and experimental laboratory of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been named a director of the American Foundrymen's association and also appointed as chairman of the important grey iron casting committee. He is also a member of the building and equipment section of their general foundries committee, which is just now busy with the erection of a new half million dollar brass foundry. Mr. Jones received his elementary education in the high school at Martins Ferry, O., and his technical education at the Ohio State university. Prior to attending college he served an apprenticeship and worked as a molder in the iron foundry of Spence, Baggs & Co., Martins Ferry, and during his college course had charge of the experimental iron foundry of the university.

Since 1903 Mr. Jones has been with the Westinghouse company in charge of chemical and physical testing work, which has been largely related to the operations and products of their iron, steel, brass and malleable foundries. During his lifetime Mr. Jones has written a number of technical articles on chemical and metallurgical subjects. He is a past president of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers, a member of the executive committee of moulding sand research of the American Foundrymen's association and National Research council, of various committees of the American Society for Testing Materials and of the advisory committee on nonferrous alloys of the bureau of standards and honorary member of the American Electroplaters society.

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Orville Coppock has been appointed sales manager of the Standard Motor Truck Co., Detroit.

* * *

Fred McDonel Jr., Lansing, Mich., has been named production manager of the Summit Screw Co., Chicago.

* * *

Kurt Orbanowski, American representative of Otto Wolff & Co., steel manufacturers, Cologne, Germany, has sailed for Germany, to return in October.

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Emil Levy, treasurer of the Columbia Metal Products Co., Chicago, resigned Sept. 1.

* * *

Norris J. Clarke, president of the Lake Erie Bolt & Nut Co., Cleveland, has returned from a several month's tour of Europe.

* * *

Walter Harnischfeger, vice president of the Harnischfeger Corp., Milwaukee, sailed Sept. 3 for South America, to be gone about two months.

* * *

Paul G. Leoni, managing director of Wm. H. Muller & Co., and president of the Iron & Ore Corp. of America, 11 Broadway, New York, sailed for Europe Sept. 5.

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J. Harry Main, former supervisor of purchases for General Motors Corp. has been appointed Detroit district representative of the General Drop Forge Co., Buffalo, with offices in Detroit.

* * *

George B. Troxell, research engineer for the Bethlehem Steel Co., Bethlehem, Pa., has just returned to the United States from an extended trip to Europe where he visited steel plants in France, England, Germany and Belgium.

* * *

John T. Llewellyn, formerly vice president of the Chicago Malleable Castings Co., Chicago, succeeded his late brother Silas J. Llewellyn as president of that company. James S. Llewellyn has been made vice president and secretary.

Paul Llewellyn was elected vice president and treasurer.

* * *

Col. Edgar S. Gorrell has been elected vice president of the Stutz Motor Car Co. of America, Inc., Indianapolis. He will be elected a director of the company at an early meeting of the board. Colonel Gorrell resigned as vice president of the Nordyke & Marmon Co., also of Indianapolis, a week before his appointment. Colonel Gorrell was the youngest colonel in the American expeditionary force and was awarded the American distinguished service medal, the French Legion of Honor and the British D. S. C. He also was cited by General Pershing.

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Philip S. Savage, formerly superintendent of coke ovens, for the By-Products Coke Corp., Chicago, has returned to Donner-Hanna Coke Corp., Buffalo, as superintendent of operations, replacing D. M. Rugg, recently resigned.

* * *

Otto Basson, technical director of the Maschinenbauanstalt Humboldt of Cologne, Germany has just concluded a month's tour of American industrial centers including New York, Cleveland, Detroit, Chicago, and Pittsburgh for the purpose of examining American equipment used for the production of automotive castings.

* * *

Earle Seale has been electetd secretary and assistant treasurer of Domhoff & Joyce Co., Cincinnati, pig iron and coke sellers. Mr. Seale, who has been connected with the company 13 years, succeeds Clarence Hayward, who recently resigned after 25 years service to enter the real estate business in Florida.

* * *

James B. Armstrong has been appointed district sales manager for the Lebanon Drop Forge Co. and the Lebanon Steel Foundry with offices at 303 Fifth avenue, New York. Mr. Armstrong was for several years connected with the Bethlehem Steel Co.'s New York office; at first in charge of the sale of drop forgings and later handling pig iron sales. During the past year, he represented Henry H. Adams & Co. in the New York territory.

* * *

Robert Montgomery Bird, just nominated for the presidency of the American Society for Steel Treating in 1926, was born in Bethlehem, Pa., Sept. 17, 1882. Following education at Lehigh university, Bethlehem, he entered the Bethlehem Steel Co., where he remained until Jan. 1, 1924. He then became associated with George F. Pettinos, Philadelphia, in production

and sales of foundry sands, supplies and graphites.

* * *

John McConnell, formerly vice president in charge of operations of the United Alloy Steel Corp., Canton, O., has joined the organization of the Donner Steel Co., Inc., Buffalo, in a consulting and advisory capacity.

* * *

Fred W. Kulicke has succeeded B. W. Brodt, resigned, as sales engineer of the Budd Wheel Co., Detroit. For the last nine years he has been connected with the Atwater Kent Mfg. Co., Philadelphia.

* * *

M. L. Murray, for 36 years engaged in the wire business, has resigned as secretary, treasurer and general manager of the Alloy Metal Wire Co., Moore, Pa., manufacturer of resistance wire and nickel alloys.

* * *

Bradlee Van Brunt, for several years director of publicity of the Bucyrus Co., South Milwaukee, Wis., manufacturer of excavating machinery, has resigned and is leaving for Florida to engage in the real estate business.

* * *

Vincent Delport, European manager with headquarters in London, for the Penton Publishing Co., Cleveland, publisher of IRON TRADE REVIEW, is spending several weeks in the United States and will attend the American Foundrymen's association convention at Syracuse, N. Y., Oct. 5-9.

Convention Calendar

Sept. 24-26—American Electrochemical society. Fall meeting at Chattanooga, Tenn. Colin G. Fink, Columbia university, New York, is secretary.

Sept. 28-Oct. 2—National Safety council. Fourteenth annual safety congress at Cleveland. A. A. Mowbray, 168 N. Michigan avenue, Chicago, is director.

Sept. 30-Oct. 2—National Tool Builders' association. Annual convention at Washington. E. F. DuBrul, 630 Vine street, Cincinnati, is general manager.

Oct. 1-3—American Gear Manufacturers' association. Semiannual meeting at West Baden Springs hotel, West Baden, Ind. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

Oct. 5-9—American Foundrymen's association. Convention and exposition at State Fair Grounds, Syracuse, N. Y. C. E. Hoyt, 140 South Dearborn street, Chicago, is secretary.

Oct. 8—Eastern States Blast Furnace and Coke Oven association. Annual meeting at Buffalo. C. R. Meissner, Weirton Steel Co., Weirton, W. Va., is secretary.

Oct. 21-23—American Welding Society. Fall meeting and exhibition at Massachusetts Institute of Technology, Boston. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

Oct. 28-30—National Association of Farm Equipment Manufacturers. Annual convention at Congress hotel, Chicago. H. J. Sameit, 608 South Dearborn street, Chicago, is secretary.

Beehive Coke Output Is Showing An Increase

Washington, Sept. 22.—Total production of beehive coke during the week ended Sept. 12, as indicated by the number of cars loaded for shipment, amounted to 169,000 net tons, an increase of 3000 tons, or 0.2 per cent, compared with that in the preceding week, according to the department of commerce. Compared with output during the corresponding week in 1924, the increase is 58,000 tons, or 52.3 per cent. There were 332 additional ovens fired during the week. The production of beehive coke by districts follows:

	—Week ended— Sept. 12, 1925	Sept. 5, 1925	Sept. 13, 1924
Pennsylvania and Ohio	133,000	129,000	74,000
West Virginia	11,000	11,000	6,000
Alabama, Kentucky, Tennessee and Georgia	11,000	13,000	14,000
Virginia	6,000	5,000	8,000
Colorado & New Mexico	5,000	5,000	5,000
Washington and Utah	3,000	3,000	4,000
United States Total	169,000	166,000	111,000
Daily average	28,000	28,000	19,000

The production of bituminous coal is running at the best rate since early in the year. The output for the week ended Sept. 12 was 9,993,000 tons, compared with 10,826,000 tons one week before. The decline was due to the Labor day holiday. Anthracite production has been almost entirely suspended by the strike in that industry.

Steel Castings Bookings Drop in August

Washington, Sept. 22.—Sales of steel castings in August dropped off slightly from July, according to department of commerce reports, bookings for the month just ended totaling 51,358 tons compared with 54,474 in July. Bookings in August were at 51.2 per cent of capacity compared with 64.2 in July. Sales for the first eight months of 1925, totaled 466,837 tons compared with 473,250 tons for the same period of 1924.

The following comparison shows bookings of commercial steel castings by 68 identical companies, with a monthly capacity of 100,400 tons in 1924 and 1925 of which 43,000 tons usually is devoted to railway specialties and 57,400 to miscellaneous castings.

	Total net ton	Per cent capacity	Railway specialties net tons	Miscellaneous net tons
1922 totals	812,741	69.6	404,682	408,059
1923 totals	894,780	74.6	386,939	507,841
1923 mo. av.	74,565	74.05	32,245	42,320
1924 totals	772,840	64.1	388,357	384,483
1924 mo. av	64,403	64.1	32,363	32,040
1924				
August	36,363	36.2	14,532	21,831
Total (8 mos.)	473,250		232,985	240,265
September	62,509	62.3	29,567	32,942
October	66,697	66.4	31,130	35,567
November	74,220	73.9	41,343	32,877
December	96,164	95.8	53,332	42,832
1925				
January	82,922	82.6	40,799	42,123
February	61,535	61.3	27,237	34,298
March	59,508	59.3	21,670	37,838
April	59,008	58.8	22,109	36,899
May	49,619	49.4	16,055	33,564
June	48,413	48.2	16,675	31,738
July	54,474	54.2	19,953	34,521
August	51,358	51.2	18,235	33,123
Total (8 mos.)	466,837		182,733	284,104

Ford Delay Causes Drop in Auto Output

Washington, Sept. 22.—August production of automobiles declined sharply, according to the report of the department of commerce. The drop was due almost entirely to the difficulties and delay incident to getting production under way for the new models of the Ford Motor Co., it is understood. With the exception of this single company, general production in August increased by about 11 per cent over July.

Passenger Cars

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	84,189	228,860	293,822	212,908
Feb.	112,755	260,320	343,444	252,785
March	157,839	327,038	357,096	332,151
April	202,567	351,622	346,355	391,802
May	238,462	358,646	286,266	382,714
June	268,501	343,985	225,034	364,806
July	228,456	303,497	244,503	357,883
Aug.	252,795	318,848	255,193	221,756
Sept.	190,867	302,340	263,468	
Oct.	219,919	338,469	260,845	
Nov.	217,953	288,810	204,316	
Dec.	210,692	279,862	182,028	
Total	2,384,995	3,702,297	3,262,280	2,294,583

Trucks

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	10,005	20,506	30,627	28,141
Feb.	13,853	23,283	32,756	34,410
March	20,631	36,619	36,270	45,098
April	23,429	39,641	37,766	47,822
May	24,880	45,677	35,112	43,303
June	26,962	42,453	28,884	38,042
July	22,507	31,703	26,227	41,748
Aug.	25,273	32,195	28,503	37,643
Sept.	19,905	29,626	31,829	
Oct.	22,446	31,515	32,332	
Nov.	22,522	29,166	27,766	
Dec.	20,911	28,862	27,324	
Total	253,324	391,246	375,426	276,027

Hunt Is Renominated

Washington, Sept. 22.—Charles W. Hunt, of Iowa, who was named a member of the federal trade commission last year to fill the unexpired term of Victor Murdock, resigned, has been renominated by President Coolidge. This appointment must be confirmed by the senate, where it is expected to strike some opposition. Commissioner Hunt, who is a Republican, has been aiding the Republican majority in the commission, led by Commissioner W. E. Humphrey, which has succeeded in revising some of the commission's rules regarding publicity of cases.

Obituaries

EDWARD DE MILLE CAMPBELL, professor at the University of Michigan and prominent in the activities of technical and engineering societies, died Sept. 19 at his home in Ann Arbor. Dr. Campbell achieved unusual fame because handicapped by blindness in 1892 he has since attained most of his achievements. He was born Sept. 9, 1863, and was graduated from the University of Michigan in 1886. He was chemist for the Ohio Iron Co., Zanesville, O., in 1886-7; for the Sharon Iron Co., Sharon, Pa., 1887-88; Dayton Coal & Iron Co., Dayton, O., 1888-90. He left industry then to accept a position with his alma mater, becoming assistant professor of metallurgy in 1890. He became a junior professor of metallurgy and metallurgical chemistry in 1893; junior professor of analytical chemistry in 1905; professor of chemistry and director of the chemical laboratories in 1914; and served as professor of chemistry and metallurgy and director of the chemical laboratory since 1920. He acted as consulting chemist for the ordnance department at large during the war.

Dr. Campbell's blindness resulted from a laboratory explosion while at the university in 1892 when studying gases obtained by dissolving steel in hydrochloric acid. Within five days he was back in his laboratory and teaching his classes. He formed a seminar of his five most advanced students. They read the newest journals and papers aloud for him. He designed new equipment, trained two assistants and renewed his research. Partial failure of his hearing handicapped him still further but he proved that he who thinks most discovers most.

Dr. Campbell was prominent in organization work. He was elected an honorary member of the American Society for Steel Treating in June, 1921, in recognition of his research work. He was a member of the American Chemical society; Iron and Steel institute; Faraday society; Washington Academy of Sciences; Michigan Academy of Sciences; Tau Beta Pi; Michigan State Gas association; Society of Detroit Chemists; Alpha Chi Sigma; Sigma Psi and Phi Lambda Upsilon.

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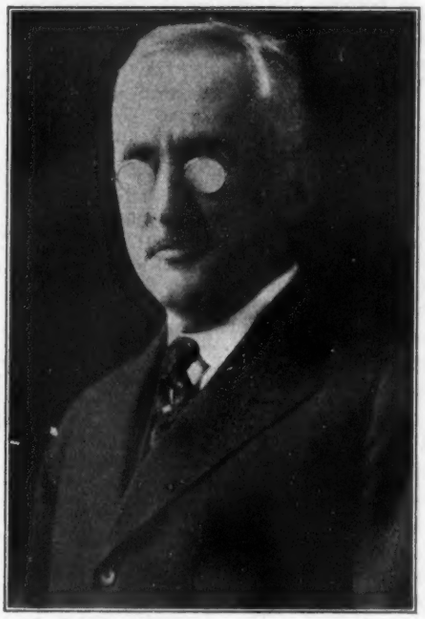
Mark H. Gascoigne, for many years connected with the American Car & Foundry Co., just died in Detroit at the age of 55.

* * *

Henry Rose, sales agent of the American Steel & Wire Co., in the Widener building, Philadelphia, died Sept. 17 in a hospital in that city following an operation. Mr. Rose originally was with the Washburn & Moen Co. and served as assistant manager for that company at New York. When that company was acquired by the American Steel & Wire Co., he handled the sale of Washburn & Moen products. In 1909 Mr. Rose was given charge of the Philadelphia territory. He was an active member of the Steel Club of Philadelphia.



DR. EDWARD DE MILLE CAMPBELL

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William H. Heulings Jr., vice president and general manager of sales of the J. G. Brill Co., Philadelphia, railway car builders, died in that city Sept. 14, aged 56. He had been with the Brill company since boyhood.

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Frank J. Egan, who died at Darien, Conn., Sept. 8, aged 47, was chief representative in this country of the Brazilian Railway Co. and allied interests. Mr. Egan was a well-known banker and had been president of the American-Italian Commercial Corp.

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Frank M. Garland, inventor of the Garland rapid fire gun, and envoy of President Wilson to Europe during the World war, died recently at his home in New Haven, Conn. He was a member of an expedition which at the close of the Chino-Japanese war went to China in an effort to develop mines and build roasd. He died at the age of 71.

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Edward Perkins Selden, retired manufacturer, a former president of the Erie City Iron Works, died at his home in Erie, Pa., on Sept. 11, as announced in IRON TRADE REVIEW, Sept. 17. He was a native of Erie County, born there in 1858, and at the time of his retirement in 1923, had spent 50 years of his life with the Erie City Iron Works. Mr. Selden was one of the pioneers in patenting and manufacturing improved types of boilers now in use, and was well known to the steel trade. In addition to his activities as a manufacturer, he has been prominent for many years in state and local Y. M. C. A. work, and was a leader in every philanthropic movement.

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Matthew Hale, 43 years old, attorney, of New York and Washington, and a member of the wage umpire board during the administration of President Wilson, died in Georgetown university hospital, Washington, after a month's illness of heart disease. After graduating from Harvard, Mr. Hale practiced law in Boston, and in 1913 purchased the *Boston Journal*, but later became interested in the shipping industry, with which he was associated practically throughout the remainder of his life, in addition to law practice. He was a member of the South Atlantic States association, of which he was a former president; member of the National Merchant Marine association, the United States Ship Operators' association, and the American Merchant Marine joint commission. He was appointed a member of the wage umpire board during the war.

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John F. Bell, member of Bell Bros., Twenty-seventh street and the Allegheny Valley railroad, Pittsburgh, operators of a foundry in connection with their smelting and refining plant, died Sept. 20 at his home in that city.

British Steel Revival Meets Delay

(*Concluded from Page 775*)

works extensions and station rebuilding, some of which is long overdue. If capacity was anything near that of prewar the steel trade would now be moderately busy, but the business available is far below tonnages required by up-to-date steelworks. Many of the schemes involve steel ranging from 50 tons to 200, and anything over 1000 tons is regarded as a windfall. Steel prices are quotably unchanged. Plates are on the £8 17s 6d ($43.03) basis for delivery in the Midlands, but £8 15s ($42.43) would be accepted and the engineers calculate on buying at figures substantially below these quotations. Steel billets remain at £6 10s ($31.52) but ample supplies could be bought at £5 12s 6d ($27.28) delivered from Belgium. The German quotations are decidedly lower, but business with that country is for the most part restricted to cold-rolled material, wire and a few products quoted substantially below English prices.

Importations of steel are divided chiefly between joists and billets. The foreigners have been talking for weeks past about minimum prices, but their quotations continue to decline. Joists offered at £5 4s ($25.22) f.o.b. Antwerp for a tensile test of 28/32 tons and £5 3s ($24.97) for untested represents a fall of 1s ($0.24) upon recent offers.

The high rate at which foreign material is coming in is shown by the latest report of the Tees conservancy commission, to the effect that during the past 10 months the imports to the Tees of iron and steel totaled 151,839 tons, compared with 106,744 tons a year ago and 53,399 tons in the prewar period. It is evident enough that reductions in British material have so far failed to influence in any degree the large volume of material coming in from abroad.

The brightest department continues to be galvanized sheets for which orders come in regularly, leading firms now booking for December. Scotland is getting a fair share of this business, works being fully employed, equally for light black and galvanized sheets mainly for export. The good demand from the sheet mills is helping the steelworks to some extent, and less pressure is being shown by the Welsh makers in competing for Midland business. A slight concession in price has brought tin and sheet bars to £6 7s 6d ($30.91) delivered. Sheets are very firm on the basis of £16 5s ($78.81) with a proportion of new business at 2s 6d ($0.60) over this price, where the contracts are light or quick delivery is wanted. The principal demand is for light gages. Black sheets are a fairly strong market for home and foreign requirements.

A decided improvement is developing in the tin plate market, prices having now settled to a basis of 19s 6d ($4.73). The lower prices prevalent a few weeks ago have disappeared, practically no business being done under the 19s ($4.61) figure per box. Orders are coming in from all the usual markets, the Continental buying including some orders from Russia. It is estimated that the production is now 75 per cent capacity, and a number of the mills have restarted after remaining idle since the August bank holiday.

The scrap market is to an extent following the lines anticipated recently, quotations are firmer, merchants generally quote £3 7s d ($16.36) for heavy scrap deliveries in South Wales, a rise of 2s 6d ($0.60) over recent figures. A similar advance has taken place in connection with scrap offered in Midland centers such as Sheffield. Buyers still hesitate and are disinclined to place large contracts on the basis of present qoutations. Consequently orders are restricted to small tonnages, making, however, a slightly better aggregate than for some time past. Among recent reductions boiler plates may be mentioned now £12 ($58.20) as against the recent figure of £13 ($63.05), hoops also having been reduced £10 5s ($49.71). The signs generally are slightly more favorable, fair quantities of engineering work having been ordered recently which should react upon the pig iron industry.

Reparations Deals Hurt French Mills

PARIS Sept. 2.—(*European Staff Service*)—The steady decline in railway goods traffic merely reflects general uneasiness in the French domestic market. During the past six months pressure from the government has had the effect of restricting all orders by railway companies, and these have now practically ceased. The general policy is to keep down expenses. This policy has been especially manifest in recent business. Strong complaints are being made by French car manufacturers of the injury inflicted upon their industry through the placing of orders for several thousand cars with German manufacturers in connection with the reparations scheme. It is reported that by way of compensation to the French builders an important order is about to be placed at home. Without some such business important French firms are threatened with a stoppage.

Steel and pig iron production continues at a high rate and export business is active. At present export demand is absorbing nearly 50 per cent of the steel output. Against this is the decided falling off in home consumption, indicating internal conditions are far from flourishing.

Deliveries of coke under the reparations scheme continue satisfactory. The furnaces are maintaining production, the output for July being at the annual rate of 8,500,000 metric tons. Another furnace is about to be blown in. Foundry pig iron 2.50 to 3 per cent silicon is quoted at

(Franc—$0.048)

315 francs ($15.16) f.o.b. Antwerp for export. Basic bessemer pig iron is 320 francs ($15.40) f.o.b. Antwerp for export. The domestic price remains fixed at 345 francs ($16.50).

Hematite pig iron is unchanged. Spiegel and hematite pig iron producers have organized their syndicates and October prices are to be fixed from 440 francs ($21) to 475 francs ($22.50).

In the steel market the semi-finished products department has satisfactory orders but little business is being done in merchant bars.

Basic bessemer billets are quoted at 4£ 11s 6d ($22.15), the domestic price being 440 francs ($21.15). Belgian billets are £4 12s 6d (22.30).

Merchant bars are £5 6s 6d ($25.70) for export and about 545 francs ($26) in the domestic market. Belgian bars are £5 7s 6d ($25.90). Beams are 500 francs ($24) in the home market. Wire rods are around £5 12s 6d ($27.40) for export.

Activity is declining in the plate and sheet market. Prices are quoted at £6 5s ($30.30) f.o.b. Antwerp and about 750 francs ($36) in the home market. Prices of Belgian plates are slightly higher. French wire is about 910 francs ($44), galvanized wire is 1210 francs ($58.50), wire nails are about 1000 francs ($48.20) and concessions are freely offered for attractive export business. The above prices indicate the wide margin between domestic and export rates.

British Iron Shipments Grow in August

BIRMINGHAM, Eng., Sept. 11.—(*European Staff Service*)—Statistics of the Middlesbrough shipments for August, although showing a slight improvement in July reflect the dismal state of the trade and the great difficulties encountered in foreign business. The total foreign exports were 15,734 tons and coastwise, 12, 714 tons, Of the latter no less than 11,534 tons was sent to Scotland, although foreign competition in this material is most effective on the Clyde. The United States took 1425 tons, Italy 5220, Denmark 2753 tons, Belgium 2137 and Germany 1405. All other purchasers took below 1000 tons. The total number of operating furnaces is 35 with 12 on ordinary Cleveland, nine on hematite and 14 other kinds.

In manufactured steel export shipments advanced from 50,450 tons in July to 51,381 tons in August. The aggregate of all classes was 97,879 tons, an increase on July of 4595 tons and the best monthly total since the 98,001 tons in March. India as usual takes the lead as the largest buyer, taking 9242 tons of steel, Argentine 2675 tons, Australia 2251 tons, Natal 1958 tons, New Zealand 1427 tons, Kenya 2174 tons, Egypt 1544, and Denmark 1285 tons.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

SOUTH SIDE MALLEABLE CASTINGS CO., Milwaukee, Walter W. Lange president, announces plans for additions and improvements which will increase capacity about 35 per cent. Walter W. Oeflein Inc., 86 Michigan street, has been given a contract for a shop building 177 x 186 feet, designed by A. W. Hoffmann, consulting engineer, Milwaukee. The company specializes in automotive work and supplies several of the more important builders.

* * *

FIFTEEN motorbus and 30 parts manufacturers have signified intention to participate in the first national motor bus show at Detroit, Nov. 16-21. C. E. Stone, of the Peoples Motor Coach Co., is chairman of the committee in charge. The society of Motor Transportation Engineers will hold its annual meeting during the show.

* * *

HOLLAND FURNACE CO., Holland, Mich., has purchased the old Johnson Milling Co. property at Muskegon for a furnace warehouse. The milling machinery is to be junked.

* * *

HOFFMAN HEATER CO., Louisville, Ky., manufacturer of automatic gas water heaters, is considering adding a brass foundry with capacity for 1500 to 2000 pounds of castings per day. The company may buy an established foundry rather than build a new plant.

* * *

WITH a new charter the Fremont Body Co., Fremont, O., is being reorganized with the purpose of enlarging the plant and personnel to care for increased business. An addition to the plant has just been completed and occupied, giving better manufacturing facilities.

* * *

THE Marine Supply Co., Pittsburgh, has received an order from the Carnegie Steel Co. for three special capstan units for a ship to be built by the American Bridge Co.

* * *

THE Independent Lock & Key Co., Leominster, Mass., has purchased the buildings and property of the Universal Grinder Co., Fitchburg, Mass., and will move its operations from Leominster to Fitchburg as soon as arrangements can be made. The change is in the line of expansion.

* * *

MAAS CARBONATOR CO., 2218 Clybourn street, Milwaukee, manufacturer of carbonating machinery and equipment, has disposed of its 2-story machine shop to the Sengbusch Self-Closing Inkstand Co., Milwaukee and will build a new plant for its own use at once. The Sengbusch company will add two stories to the plant and increase floor space to 40,000 square feet. Possession will be taken about May 1, 1926.

* * *

NEW bookings in three orders amounting to $2,250,000 in a month's time are reported by the Allis-Chalmers Mfg. Co., Milwaukee. The most recent contract involves $500,000 for rock crushing machinery for the Anaconda Copper Mining Co., added to which is a $1,000,000 order for generating equipment for the Public Service Co. of Northern Illinois, and a $750,000 contract for diesel engine and pumping equipment for the Ozark Pipe Line Co. of St. Louis.

* * *

WITH the rebuilding of its plant, which was recently destroyed by fire, the Standard Machine Co., Owosso, Mich., has begun further expansion by the manufacture of electrical appliances. Machinery has been purchased and a new sales organization operating from a branch office in Detroit has been perfected for the new line of electric water heaters and radiators. The company is continuing the manufacture of construction machinery as before the fire.

* * *

A SAW MILL contract which ranks with the largest recently placed has been let to the Prescott Co., Menominee, Mich., by the department of the interior, bureau of indian affairs, for a mill at Neopit, Wis., to replace a mill burned two years ago. The Wisconsin Engineering & Construction Co., Green Bay, Wis., has been awarded the construction. The mill will be fireproof reinforced concrete. In the equipment are 45 electric motors from 5 to 150 horsepower, a twin 1500-horsepower corliss engine direct connected to a 800 kilowatt generator, 33 speed reducers of herringbone type with forged pinions and automatic oilers. All conveyors are of steel and the live rolls have all-steel surrounding yoke frames mounted on structural steel roll cases.

* * *

THE Gray Mfg. Co., formerly Gray Motors, Inc., Detroit, has started production on its new Tilling-Stevens gas-electric bus, a European development for which the company has the exclusive American rights. The bus has a 4 or 6-cylinder internal combustion engine, coupled to an electric generator, which transmits power to a propeller shaft. The company states it has orders on hand for 200 buses. The company is also increasing production on Gray motor cars.

* * *

THE Cincinnati Electrical Tool Co., Cincinnati, has been reorganized with Joseph Wolf, president and treasurer; R. K. LeBlond vice president and Edward G. Schultz secretary. Mr. Wolf, who formerly was vice president, succeeds J. Albert Goldman, who has retired from the business. Mr. LeBlond is president of the R. K. LeBlond Machine Tool Co. and Mr. Schultz treasurer. Louis Wolf, who was secretary, also has withdrawn from the firm.

* * *

JENKINS MACHINE CO., Sheboygan Wis. manufacturer of specialized woodworking machinery for automobile body plants, furniture, casket piano factories, etc., has bid in the entire property of the defunct Falls Motors Corp., Sheboygan Falls, Wis. The Falls plant contains 122,000 square feet of space, with 13½ acres of land. The Jenkins company has been enlarging its plant in Sheyboygan to the limit of the present site and needs more room. The Jenkins company was established in 1882 to make chair factory equipment. The Falls company was established in 1890 to build woodworking machines, but in 1917 sold this to the Jenkins company and confined itself to building automobile engines, becoming the Falls Motors Corp. A. G. Stuedeman, president and principal owner of the Jenkins company, was manager of the woodworking machinery and engine stock departments of the Falls company from 1912 to 1916.

Warehouse Buying Gains Steadily

September Sales Volume Increasing—Prices Show Firmness

DEMAND for warehouse products continues to increase steadily. Most jobbers report a gain over August, a good month. Prices show more firmness, although price revisions remain lacking.

Warehouse prices in the New York metropolitan district are unchanged, with black and galvanized sheets still weak. Demand generally shows improvement over last month.

Steel bar prices are easier at Philadelphia, some instances such as waiving of certain extras being noted. On 90 per cent of the business 3.20c base continues done. Plates and shapes are weak, with shading of even 2.80c in some cases. September daily booking are equal to those of August.

Demand is increasing weekly from Pittsburgh warehouses. Bookings are ahead of August at this time. Prices are firm, although floor plates in carload lots have been reduced from 4.00c to 3.75c, base.

September volume will exceed that of August in Cleveland, most jobbers reporting increasing business. A slight drop was recorded last week by one large dealer but this is believed temporary. Prices continue firm, shading being less encountered.

Detroit demand continues to hold up well. Tonnage shipped this month will far exceed that of September, 1924. Competition is stressed in black and galvanized sheets. Structural products are moving freely Prices are unchanged and steady.

St. Louis warehousemen report steady demand. Miscellaneous manufacturing demand continues brisk.

Movement of materials from Cincinnati warehouses is increasing weekly. Buyers are demanding immediate shipments and this is working a hardship on the jobbers, because mill shipments are not coming out promptly. Most jobbers are booking more business than they anticipated. Current orders are centered on commercial and reinforcing bars. Prices are firm.

Warehouse business at Chicago has been increasing slowly, the gait being about parallel with that of the western mills. All lines have shared in this slight improvement. Western warehouse prices generally are unchanged.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.15c
New York	3.24c
Philadelphia	3.20c
Pittsburgh	2.90c
Portland	2.85c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago	2.60c
Cincinnati	3.30c
Cleveland	2.85c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	2.90c to 3.20c
Pittsburgh	2.10c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Pittsburgh	3.00c
Portland	2.85c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Philadelphia, 3/16-inch	3.00c to 3.40c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.10c
Detroit	3.75c
Los Angeles	3.70c
New York	3.89c
Philadelphia	3.35c
Portland	4.25c
San Francisco	3.70c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	4.95c
Buffalo	4.40c
Chicago	4.00c
Cincinnati	4.55c
Cleveland	3.90c
Detroit	4.40c
Los Angeles	4.65c
New York	3.90c to 4.35c
Philadelphia	4.35c
Portland	5.25c
San Francisco	4.65c
Seattle	5.25c
St. Louis	4.50c
St. Paul	4.25c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	5.45c
Chicago	5.00c
Cincinnati	5.65c
Cleveland	5.10c
Detroit	5.50c
Los Angeles (corr. 26 ga.)	5.75c
New York	4.85c to 5.25c
Philadelphia	5.45c
Portland	5.75c
San Francisco	5.75c
Seattle	6.25c
St. Louis	5.50c
St. Paul	5.25c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	4.25c
New York	3.99c
Philadelphia	3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.80c
New York	4.49c
Philadelphia	4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	3.95c	4.45c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.80c	4.30c
Detroit	3.90c	4.40c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	3.75c*	.....
Seattle	4.75c*	.....
St. Paul	4.05c*	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.15c
Buffalo	6.65c
Chicago	7.15c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.30c
New York	6.10c
Philadelphia	6.10c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL
New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE
Discounts from warehouse, New York City
Standard Steel Pipe
WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	—11	+ 6
7 to 12-inch lap	— 3	+16

Await Air Disaster Investigation

Engineers and Manufacturers Believe Metals and Design of SHENANDOAH Were Not Instrumental In Crash—Future Aircraft Programs Hinge on Results of Investigating Committee and Governmental Appropriations

WASHINGTON, Sept. 22.—Should the government move to build another dirigible to replace the wrecked SHENANDOAH? It is considered entirely probable that recommendations would be forthcoming from the navy department's technicians to build its metal skeleton of duralumin, similar to the framework of the SHENANDOAH.

None of the navy's experts who thus far have studied the wreck of the SHENANDOAH at Ava, O., and investigated the parts of the dirigible, could ascribe the accident in any way to faulty or weakened structure of the duralumin girders or the high tensile steel wires that made up her braces. Some doubt is expressed as to whether appropriations can be obtained for the construction of another military dirigible, the remaining dirigible, the LOS ANGELES, being prohibited by treaty from military use. It is likely that the building of dirigibles will go on after the special commission appointed by President Coolidge completes its investigation of the causes of the wreck of the SHENANDOAH and of the government aircraft situation.

The study thus far completed by navy department technicians still proclaims the ill-rated dirigible as one of the wonders of science, engineering skill and metallurgical design. Rear Admiral C. W. Dyson, one of the engineering specialists of the navy department, has reported to Secretary Wilbur that the collapse of the SHENANDOAH may have been due to the diagonal bracing coming loose from the supports. This does not reflect any weakness in the high tensile steel wires which made up the bracing.

Expert Analysis Not Yet Available

Not much expert analysis of the wreck has been made available at this time. Admiral Dyson and a few others have studied the tangled metal for reports to Secretary Wilbur, but other expert opinion will be brought out in more formal investigations. The metal framework of the SHENANDOAH was an aluminum alloy containing about 4 per cent copper, 0.5 per cent magnesium and 0.4 per cent manganese, designed into a maze of girders, struts and beams, about 3000 struts alone making up the dirigible's intricate design.

Probe Air Mysteries

WILL congress appropriate funds for building another military dirigible? This is the much mooted question facing aircraft and government officials until present investigation as to the causes for the crash of the "Daughter of the Stars" is concluded. Naval experts and engineers assure that no defect of metals or design was accountable for the disaster but that exceptional atmospheric conditions uncontrollable by man caused the wreck.

When properly heat treated, this duralumin is said to have the strength of mild steel, with about two-thirds the weight. A girder of duralumin 16 feet long has been balanced on one finger of the hand, and yet by placing the tips on supports it would bear the weight of eight men sitting upon the girder.

Hull Built of Latticed Girders

The hull structure consisted essentially of a framework of the duralumin in latticed girders running longitudinally and transversely, with the high tensile steel wires acting as diagonal braces in the quadrilateral panels formed by the girders. The rings formed by the transverse girders were 16.4 feet apart, and the alternate rings were cross-wired with about 80 steel wires in each ring, giving transverse rigidity to the hull, and dividing it into 20 compartments, each of which contained a gas cell made of cotton cloth lined with goldbeater's skin, these skins having been obtained from the intestines of oxen.

Duralumin was invented by a Gernam named Wilm nearly 20 years ago, but was not used in this country until the war. Production of duralumin in this country has been successfully accomplished by the Aluminum Co. of America and the Baush Machine Tool Co. under German patents allocated to these companies by the Chemical Foundation after purchase from the alien property custodian during the war.

The bureau of standards of the department of commerce and the naval aircraft plant at Philadelphia, had a large part in the development of the technique of the production and heat treatment of the duralumin used in the SHENANDOAH, which was designed on the plan of a German airship, the L-49, brought down intact in an American sector in France in 1917. The French government made detailed drawings of this ship, and these were forwarded to the United States navy in 1918. The SHENANDOAH has one more cell in the parallel middle body than her German prototype, and the weight and strength of the framing were increased somewhat, especially near the bow to provide for the airship lying to a mooring mast, an operating feature never practiced by the Germans. The power plant also was increased from five engines of 240 horsepower each to six of 300 horsepower each. These changes and the use of helium involved considerable loss of load capacity, and altitude attainable. The girders and power cars were constructed by the naval aircraft factory, and the ship was assembled in the hangar of the naval air station at Lakehurst, N. J.

The girders of the SHENANDOAH were triangular in section and were composed of longitudinal channels along the three corners, braced together by crossed lattices formed of light corrugated stampings riveted to the channels, and to each other where they crossed. A typical longitudinal girder is 16.4 feet long between transverse frames, weighs only 10 pounds and is capable of sustaining a column load of 5000 pounds, or a uniformly distributed transverse load of 2000 pounds, without allowing for the extra strength given by the rigidity of the connections to the transverse frames.

Await Report of Naval Board

Metallurgical men and engineers will await with eagerness the findings of the naval board of inquiry, as to whether anything can be developed in regard to the stamina, or the lack of it, of the frame. Some of the investigations, or perhaps all

of them, may be open and the development of expert opinion may come out as the hearings progress.

One of the technicians of the navy department shortly after the accident pointed out that the maximum of greatest stress in a dirigible usually has been found to be about two-thirds of the distance from the bow to the stern. This corresponds to about the point where the first break in the SHENANDOAH occurred.

Lieut. Commander Rosendahl, in his official report on the accident, stated the violent line squall subjected the ship to enormous uncontrollable angles and strains, and the rapid vertical ascent resulted in the ship's structure breaking in two at about 7000 feet altitude at the vicinity of frame 130, which was about 220 feet from the bow, and frame 90, about 355 feet from the bow. It is believed that no dirigible yet constructed could have withstood the strain under which the SHENANDOAH was subjected.

Employers May Enforce Maximum Wage Rates

Indianapolis, Sept. 22. — Employers may organize and make an agreement to pay certain wages, and the agreement may be enforced legally, the appellate court of this state has decided. In this case employers fixed the hourly rate of pay at $1. The defendant had given a bond of $1000 that he would abide by the agreement, as had all other parties. It was found, however, that to obtain labor he had paid $1.25 an hour. Suit was brought in the county courts against the employer and his bondsmen for violation of the agreement. The lower court upheld the agreement and the case was appealed.

Foundries Should Act For Common Good

Speaking on the need of the foundry industry before the New England Foundrymen's association at Boston, Robert Crawford, president of the Atlas Foundry Co., Detroit, outlined the situation in Michigan and said that co-operation among foundries was one of the chief features desired. He told of a Detroit foundry which in financial trouble went to a group of competitive foundries for assistance. He said this was given in the shape of a comprehensive study of costs and that the troubled foundry eventually found its feet, and is now successful. He described conditions in automobile foundries, and said that in the past much dead timber had been carried by most of these. He said the Dodge Bros. foundry until recently had been forced to place its business with 25 outside foundries but that a change in the operating organization made it possible for its own foundry to produce all the castings required. He said that a foundry should be considered as a department in a manufacturing plant, and not as an independent unit. He said that at the Ford plant there was no partition between the foundry and the machine shop.

Italy Takes No Scrap From America

Washington, Sept. 22.—Italian scrap importers failed to take any of the tonnage exported from the United States in July, despite the fact that indications have pointed to an increasing consumption by Italy of American iron and steel scrap. In June, American scrap exports to Italy led the list of countries.

In July, Canada imported the leading tonnage of scrap from the United States, consisting of 1429 tons, valued at $15,214. These exports were made through New England points, from Buffalo, Washington customs district and from Detroit, with a shipment of 24 tons through Alaska. Japan bought the second largest tonnage in July, the shipments totaling 764 tons, shipped from the ports of Baltimore, San Francisco, Portland, Oreg., the Washington customs district and from Hawaii. Chinese shipments totaled 484 tons, valued at $14,874.

Recently, Italy has been denied considerable shipments of scrap from France because of new French treasury regulations, which limit the movement of steel scrap from France. Italy had been a consistent user of French scrap, and with the enforcement of the new regulations it was expected that Italy would turn to American scrap. Shipments to Italy thus far have failed to bear out this opinion, although it would be no surprise if Italy's needs for scrap will be filled later in the United States to a larger extent.

Canada took more scrap from the United States than any other consumer, 1229 tons, of which 85 tons went from Michigan. China took 481 tons, of which 252 tons went through the port of Baltimore. Japan was a large importer from this country taking 764 tons, 600 tons of which were exported through coast ports. Other importers of scrap from this country were Greece, 17 tons, United Kingdom, 104 tons, Hong Kong 63 tons and New Zealand one ton.

Poland Bars Iron and Steel Imports

Washington, Sept. 22.—In line with its policy of restricting imports from other countries, the Polish government has announced quotas for a number of American products, it is stated in a cablegram to the department of commerce from Commercial Attache Leighton W. Rogers, at Warsaw.

Contingents fixed for American products for the present year, expressed in metric tons, include articles of brass and brass alloys, two tons; iron and steel wire, two; articles or iron and steel wire, 41; automobiles (except Fords which enter as of Danish origin), 100, and fruit, articles of food, leather goods and other commodities in varying amounts. The government in this way is making an effort to improve its trade balance and to maintain exchange under present abnormal conditions in Polish trade.

These import restrictions originally were adopted as retaliatory measures against Germany, but have been extended to all countries. Polish imports upon which total restrictions are placed include iron and steel products, hardware, coal, articles of brass and copper, typewriters, calculating machines, sewing machines, textiles, and a number of other commodities. The Polish government hopes to lift these restrictions by the first of next year.

Brazil's Manganese Export Reduced in 1924

Washington, Sept. 22. — Complete figures showing shipments of manganese from Brazil during last year indicate a sharp drop in the exportation from the South American country. Assistant Trade Commissioner Richard C. Long, at Rio de Janeiro, informs the department of commerce that the total amounted only to 159,229 tons, of which the United States took the largest share, 114,208 tons. Of the remainder, 20,301 tons went to Belgium; 16,900 to England; 7200 to the Netherlands, 600 to France and 21 to Germany.

The minimum annual exportation of manganese from Brazil from 1919 to 1923, inclusive, was 205,725 tons, and during 1923 the exports totaled 235,831 tons. The decrease last year was in the face of a rising market. The average value per ton has risen from 65 milreis in 1922 to 113 in 1923 and 115 last year. The milreis had an average exchange value of $0.1094 during 1924.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

LOS ANGELES—Wiley Machine Co. is building additions to double its capacity. Hamm & Grant, engineers, are in charge of construction.

LOS ANGELES.—General Electric Co. will build distributing building, 3 stories, and centralize business now in several structures. Building planned to add four more floors. Will be heated by electricity. Conveying and elevating machinery will be required.

LOS ANGELES.—Southern California Edison Co. has awarded a contract for a power plant at Long Beach Harbor to Stone & Webster, Byrne building, including a 50,000 kilowatt generator, increasing capacity from 200,000 to 272,000 horse power.

LOS ANGELES—Union Iron Works has been awarded contract for steel building 60 x 80 feet for the Capitol Foundry Co., Phoenix, Ariz., E. C. Voss president. Equipment will include 80-foot crane runway and 2-ton crane. Foundry will specialize on mine and mill castings and general jobbing.

OAKLAND, CALIF.—Miller Auto Bed Co., 1112 East Twelfth street, manufacturer of folding beds will build a 1-story plant. L. F. Hyde, 374 Hanover avenue, is architect.

BRISTOL, CONN.—C. J. Root Co., manufacturer of brass hardware, has had plans made for a 4-story addition 55 x 125 feet, by Mas J. Unkelbach, New Britain, Conn.

NEW HAVEN, CONN.—Hill Hardware Co., Inc., has been organized by Ralph Egel, Lillian Egel, and Fabian Rosenstein, all of New Haven.

STAMFORD, CONN.—Automatic Electric Clock Co. Inc., 172 Myrtle avenue, recently organized, Mark A. Standow manager, is in the market for small tools for its purpose. It will build a plant soon.

WATERBURY, CONN.—The Connecticut Co., West Main street, will build a 1-story car repair and storage plant 205 x 368 feet. R. W. Foote, Waterbury is architect.

WATERBURY, CONN.—American Brass Co. has awarded a contract to the Immick Co., Meriden, Conn., for a 1-story addition for use as a casting shop and foundry.

WILMINGTON, DEL.—Nizer Corp. has been incorporated with $10,000 capital to manufacture refrigerating machinery. Corporation Trust Co. of America, Wilmington, is representative.

CHAMPAIGN, ILL.—Arro-Lock Roofing Co., 350 North Hickory street, has been incorporated with $10,000 capital to manufacture special roofing material by William F. August, Dalbert R. Lee and Hubert E. Goodell. Ingerch & Chapman, Swinnel building, Champaign, are correspondents.

CHICAGO—Central Mfg. District has awarded a contract to the E. W. Sproul Co., for a power plant at 2005 Pershing road.

CHICAGO.—The Columbia Metal Products Co., 361 East Ohio street, has purchased a site for a new plant at Linndale and Palmer streets but work will not be started until next year.

CHICAGO.—Supreme Autojack Mfg. Co., 701 North Clark street, has been incorporated with $60,000 capital to manufacture automobile jacks and parts by Mark Vierow, Louis Rosenfield and Max Vierow. L. Shirley Tark, 77 West Washington street, is correspondent.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

CHICAGO—Morgan-Gardner Electric Co., 2640 Shields avenue, has bought from the Motor Wheel Corp., Lansing, Mich., a 1-story building with 46,000 square feet and 23 acres of land at Harvey, Ill., a suburb of Chicago. The plant will be remodeled and furnished with new equipment.

CHICAGO.—Superior Sheet Metal Mfg. Co., 3022 West North avenue, has been incorporated with $30,000 capital to manufacture sheet metal specialties by Erich Klein, Louis Faber and Philip Schneider. Charles E. Grienberg, 127 North Dearborn street, is correspondent.

CHICAGO.—Bradley-Badger Engineering & Mfg. Co., 11253 Michigan avenue, has been incorporated with $10,000 capital to manufacture machinery, tools and implements by Chester J. Bradley, Wilks B. Gregg, Marguerite M. Bradley and Mary Jane Gregg. John Prystalski, 7 South Dearborn street, is correspondent.

EAST MOLINE, ILL.—Moline Pressed Steel Co. is having plans made for an addition to cover 6000 square feet.

ELGIN, ILL.—Elgin Clock Co., Norman W. Church, president, National street, is having plans prepared for a 1 and 2-story plant 65x300 feet. Bids will be taken about Oct. 1.

ROCK FALLS, ILL.—Russell, Burdsall & Ward Bolt & Nut Co., N. Bradford, manager, is having preliminary sketches drawn for a large plant to be built in 1926 or 1927.

SPRINGFIELD, ILL.—Shanklin Mfg. Co., 2725 South Eleventh street, has been incorporated with $100,000 capital to manufacture sheet metal articles by Edward M. Shanklin, W. E. Shanklin, and George R. Shanklin. Barber & Barber, First National Bank building, Springfield, are correspondents.

ANDERSON, IND.—A contract for a rolling mill addition for the Ames Shovel & Tool Co. has been awarded.

INDIANAPOLIS, IND.—Peerless Foundry Co. Valley and Ludlow avenues, C. W. Sparks secretary, gray iron castings, will rebuild immediately the burned portion of its plant.

KOKOMO, IND.—Kokomo Brass Co. will build a 1-story addition 50 x 132 feet. E. L. Danner has the general contract.

LAFAYETTE, IND.—Fire in the plant of the Indiana Lock Joint Pipe Co. caused heavy damage. Rebuilding will be undertaken at once as the company has much business on books.

LAPORTE, IND.—Advance-Rumely Co. will build a 1-story addition to its plant here.

PLYMOUTH, IND.—Lee Trailer & Body Co. has started construction of a 1-story plant. General contract to O'Keefe & Thompson Co.

SOUTH BEND, IND.—Bendix Brake Co., J. L. Price manager, 401 North Anthony street, will build a 1-story plant 100x600 feet. H. G. Christman & Co., 306 South Notre Dame avenue, has the general contract.

BOSTON—S. M. Howes Co., 508 Medford street, manufacturer of stoves and ranges, will rebuild the 1-story portion of its plant recently burned.

BOSTON.—Grant Oil Burner Co., Inc. has been formed with $25,000 capital by Albert L. Saunders, West Medway, Mass., Grace J. Flye, Winthrop, Mass., and Margaret S. Hildreth, Melrose, Mass.

BOSTON.—The Bon-Top Supply & Mfg. Co. has been incorporated with $50,000 capital to manufacture metal ware by Frederic H. Nucci, Roslindale, Mass., Guiseppe Scor-

Cold Strip Steel Exports Show Gain Over 1924

Washington, Sept. 22.—Comparing exports of cold-rolled strip steel from the United States in the first seven months of this year with exports for last year, the iron and steel division of the department of commerce in an analysis just made public shows that the monthly average for this year has gained by nearly 200 gross tons over the cold-rolled exports of last year.

Canada continues the largest user, having purchased 5870 tons here to July 31. Canadian imports of cold-rolled strip steel for the entire year in 1924 amounted to 7701 tons. The following table shows the exports of cold-rolled strip steel in gross tons last year as compared with the seven months this year:

Country	Year 1924	January to July 1925
Belgium	8	4
France	23	.....
Germany	.....	3
Norway	39	13
Italy	.....	12
Spain	7	3
United Kingdom	312	162
Canada	7,701	5,870
Gibraltar	.....	23
Mexico	348	49
Cuba	22	.....
Guatemala	.....	8
Panama	.....	7
Dominican Republic	1	3
French Oceania	2	1
British Oceania	.....	1
Argentine	16	5
Brazil	27	9
Chile	.....	4
China	5	.....
Philippines	.....	2
Japan	388	177
Australia	31	41
New Zealand	442	.....
	9,372	6,396

zoni, Lynn, Mass., and Andrea Giorgio, Roslindale, Mass.

BOSTON.—The C. A. Cunningham Co., metal furniture and hardware, has been incorporated with $50,000 capital by Charles A. Cunningham, Newton, Mass., Robert A. Cunningham, Boston, and John C. Litch, Whitman, Mass.

FITCHBURG, MASS.—Simonds Saw & Steel Co. has had plans made for a 1-story plant, 130 x 137 feet on North street.

BRIGHTON, MICH.—Brighton Mfg. Co., recently incorporated, W. J. Kilpatrick president and Charles E. Howland secretary-treasurer, will manufacture pumping and filter equipment. It has bought a site on which a plant will be built at once.

DETROIT—Detroit Stoker Co. will build a plant at Monroe, Mich., including pattern storage 60 x 80 feet and foundry 150 x 160 feet.

DETROIT—Gustav C. Deashe, 6051 Brush street, is having plans drawn by E. T. Knopke, 1102 LaFayette building, for a tin shop 2-stories, 20x108 feet.

DETROIT.—L. A. Young Industries, Inc., 9200 Russell street, A. D. Coffin secretary, is building a 1-story addition to its furnace building.

DETROIT.—Hotto Engineering Co., M. C. Hotto president, 515 Lycaste avenue, has had

Industrial Business Changes

WATSON ENGINEERING CO., 140 Cedar street, New York, announces its name has been changed to Wilbur Watson & Associates. The personnel will not be changed. It consists of Wilbur J. Watson, Stanley H. Chadwick and Charles D. Watson. A branch office has been established at 522 Stock Exchange building, 1411 Walnut street, Philadelphia, in charge of R. E. Reynolds, resident engineer.

* * *

Frank L. Bromley Properties, Inc., Detroit, has acquired the former plant of the Art Stove Co., at Detroit.

* * *

The Champion Brass Manufacturing Co., Coldwater, Mich., has been acquired by August C. Visel, Bronson, Mich.

* * *

Star Foundry & Machine Co., Sharon, Pa., has been bought by Robert Dempsey, Grove City, Pa., who will continue its operation.

* * *

Cored Bar Corp., 1543 Fillmore avenue, Buffalo, N. Y., has appointed Arthur C. Harvey Co., 60 Everett street, Allston, Boston, its representative in that district.

* * *

Poulson & Nardon Tool & Die Works, Los Angeles, has moved to new quarters at 1255 East Ninth street to provide space for its new line of vending machines.

* * *

Eicher & Bratt, Seattle, have been appointed by the Electric Controller & Mfg. Co., Cleveland, its representatives for the sale of control equipment in Oregon, Washington, the panhandle of Idaho and Alaska. This firm also represents the Pittsburgh Transformer Co., the Jewell Electric Instrument Co. and the Electric Power Equipment Corp.

* * *

Modern Machine Shop Inc., Danville, Ill., has bought a larger plant at 123 North Hazel street, 40 x 150 feet, to accommodate its enlarging business.

* * *

Takata & Co., Ltd., Tokyo, Japan, has located its American branch office in the Westinghouse building, 150 Broadway, New York, in charge of J. N. Murray.

* * *

Hofius Steel & Equipment Co., Seattle, has moved its office to its new plant at First avenue and Hudson street, which is nearing completion.

* * *

W. H. Daub & Co. Inc., William L. Brown, manager, Alaska building, Seattle, has been appointed representatives in the Northwest for the Koppel Sales Co.

* * *

Brown Instrument Co., Philadelphia, has opened an office at 363 High street, Los Angeles, in charge of S. F. Godfrey, branch manager.

* * *

Conveyors Corp. of America, 326 West Madison street, Chicago, has appointed Rowland & Burns, 39 Cortland street, New York, district engineers for New York territory.

* * *

Sale of the Wallace Machine Works, Indianapolis, to the Service Tool Works has been announced. Henry C. Gray is head of the Service company, which will specialize in the manufacture of dies and punches.

* * *

The Southington, Conn., plant of Peck, Stow & Wilcox Co., hardware and small tool manufacturers, was sold recently to Clarence A. Cowles of Plantsville, Conn. No announcement is made as to plans for the new property.

* * *

Bullard Machine Tool Co., Bridgeport, Conn., has established the following resident engineers: Lee G. Daniels, Chicago; Frank E. Hatch Jr., Syracuse, N. Y.; F. Archer Thompson, Detroit; James M. Welch, Pittsburgh.

* * *

Arthur C. Morse Co., 152 Temple street, New Haven, Conn., has been organized to carry on the business of Arthur C. Morse, who becomes president of the company. It is a district representative of a number of machinery and equipment manufacturers.

* * *

The Servel Corp., 17 East Forty-second street, New York, has bought the entire voting stock of the Hercules Corp., with plants at Evansville, Ind., Carteret, N. J., and Newburgh, N. Y., manufacturer of truck bodies and refrigerating machinery.

* * *

Manning, Maxwell & Moore, Inc., Pershing Square building, New York City, have been appointed exclusive agents for the sale of grinding and polishing machinery of the Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. This appointment, however, does not apply to wheels.

plans drawn for a 1-story machine shop 60x140 feet, by the Auston Co., 160 North La Salle street, Chicago.

DETROIT—Universal Starter & Generator Service has been incorporated with $10,000 capital to manufacture electric systems for automotive purposes by Florence M. Waller, Preston Brown and Thomas S. Waller, 3921 Fourteenth avenue.

DETROIT—Conichrow Steel Corp. has been incorporated with $50,000 capital to manufacture machine tools by Stuart E. MacGregor, 173 Tarbington avenue, Sandwich, Ont.; Fred E. Harvey, Detroit, and G. H. Leever, Detroit.

DETROIT—John F. Panyard Co. has been incorporated to operate a foundry for the production of pistons and piston rings, with $50,000 capital by Minnie B. Panyard, Melvana Clark and John F. Panyard, 1238 Calvary avenue, Detroit.

FLINT, MICH.—Ford Motor Co., Edsel Ford president, Highland Park, Mich., is taking bids on a factory building as an addition to the Lincoln plant. Albert Kahn Inc., Marquette building, Detroit, architect.

IRON MOUNTAIN, MICH.—Anderson Machine Shop Co. will build an addition 60x60 feet, to accommodate enlarger business.

MUSKEGON, MICH.—Muskegon Aluminum Foundry Co. is building a 1-story foundry which will be ready for machinery in a short time.

OWOSSO, MICH.—Sorg Engine Mfg. Co. has been incorporated with $50,000 capital to manufacture engines and machinery by William A. Sorg, H. C. Little and Ezra Lecureaux.

MINNEAPOLIS, MINN.—James Marrin, 416 N. E. Lincoln street, will build a foundry 40 x 86 feet.

MINNEAPOLIS, MINN.—The Heidbrink Co., 420 South Sixth street, has had plans prepared for a 2-story addition 80x120 feet, by Gage & Vanderbilt, 1615 Hennepin avenue, architects.

ST. PAUL, MINN.—Seager Refrigerating Co., Wells avenue and Arcade street, has awarded a contract to F. J. Romer Construction Co., 190 Ramsey street, for an addition, one story, 88 x 200 feet.

ST. LOUIS, MO.—Killark Electric Mfg. Co., 3940 Easton avenue, manufacturer of transformers and fuses, will rebuild at once the burned portion of its plant.

BAYONNE, N. J.—New Jersey Steel Drum Corp. has been incorporated with $10,000 capital and 200 shares no par value by Cornelius J. Brownriff, Jersey City; James J. O'Connell, Bayonne, and George J. Frommell, Hoboken. William G. Chittick, New York, is attorney.

CAMDEN, N. J.—Duncan Brown Co. has been incorporated with $125,000 capital to manufacture woodworking machinery by Elvin L. Duncan, Theodore E. Brown, Myrtle S. Duncan and Mary S. Brown. D. Truman Stackhouse, Camden, is attorney.

EAST ORANGE, N. J.—Authorized Time-O-Stat Distributors has been incorporated to manufacture time-recording instruments with $25,000 capital by William J. Wheatley, Ellen J. Wheatley, Walter A. Wheatley and Edward Swayze. Metcalf B. Hatch, New York, is attorney.

JERSEY CITY, N. J.—Manhattan Electric Supply Co., 17 Park Place, New York, is building a 6-story plant 80 x 200 feet. General contract let to James Mitchell, 999 Bergen avenue, Jersey City, N. J.

NEWARK, N. J.—Chicago Bridge & Iron Works, Chicago, is having plans prepared for a warehouse and distributing plant here.

NEWARK, N. J.—Associated American Industries Inc., a recent incorporation, will manufacture automobile lights and other accessories and snap gages, as well as do general engineering service.

NORTH BERGEN, N. J.—F. B. Randall & Son, 829 Doll avenue, are having plans made for rebuilding their rolling mill plant recently burned.

BUFFALO, N. Y.—Buffalo Wire Works Co., Inc., John C. Scheeler in charge, 320 Terrace street, will build a 4-story addition.

BUFFALO, N. Y.—Glove Woven Belting Co. will build a 1-story addition 78x100 feet at 1396 Clinton street, general contract going to Charles Berricks, 1151 Main street.

BUFFALO, N. Y.—Otis Elevator Co., 813 Northland avenue, has started additions and alterations at its plant to the extent of $47,000.

BUFFALO, N. Y.—Riverside Foundry Corp. has been incorporated with $40,000 capital to operate a foundry by Georgia Rykert, A. W. Croate and Charles Y. Rykert.

BUFFALO, N. Y.—Hydrox Chemical Co., 220 West Huron street, Chicago will build a power house and machine shop on its new site on the River road. L. A. Harding Construction Corp., 1355 Main street, Buffalo, has the general contract.

BUFFALO, N. Y.—Rice & Adams Corp., manufacturer of bottle washing machinery, has bought 13 acres at Military road and Ontario street where a large plant will be built at once. Orlando Adams is vice president.

BUFFALO, N. Y.—Fetter Steel Barrel Corp. has been incorporated with $80,000 capital to manufacture barrels, boxes and all forms of metal containers by Daniel H. Stoll, Williamsville, N. Y.; A. Glenni Bartholomew, 254 Connecticut street and Ralph S. Fetter, 123 Wesley avenue.

JAMESTOWN, N. Y.—Superior Automatic Heat Corp. has been incorporated with 150 shares $100 each and 600 shares common no par value by K. E. Herrick, G. A. Herrick and M. W. Wiener. Jackson, Manley & Herrick, Jamestown, are attorneys.

LONG ISLAND CITY, N. Y.—Meurer Steel Barrel Co. Borden avenue, is taking bids on a 2-story addition 50 x 180 feet, to close Sept. 25. L. Allmendinger, 20 Palmetto street, Brooklyn, is architect.

LONG ISLAND CITY, N. Y.—John Polachek Bronze & Iron Co. Inc., 480 Hancock street, is building an addition and making extensive alterations in its plant. Lockwood, Greene & Co., 100 East Forty-second street, New York, engineers.

NEW YORK.—Halco Steel Sash Co. has been incorporated with $5000 capital by A. W. Nelson, A. L. Moseman and E. Z. Hebberd. E. E. Messler, 256 Broadway, is attorney.

NEW YORK.—Milhan Oil Burner Co. has been incorporated with $500 capital by O. P. A. Milhan, A. Milhan and D. Milhan. F. C. Haven, 189 Montague street, is attorney.

NEW YORK—F. D. Amory, 10 East Forty-third street, has plans under way for a 2-story machine shop and garage on the Albany post road.

NEW YORK.—William H. McNutt has been incorporated with $50,000 capital to manufacture fire extinguishers by W. H. McNutt, E. B. McNutt and M. A. Baum. A. E. Amsler, Richmond Hill, N. Y., is attorney.

NEW YORK.—Quanti Products Machine Corp. has been incorporated with $20,000 capital by C. A. Bergman, J. E. Haetten and C. Backer. E. J. Kelly, 302 Broadway, is attorney.

NEW YORK—Concord Coal Corp. has bought property on East river between One Hundredth and 101st streets for a coal handling plant. Conveying, elevating and loading will be installed.

NEW YORK—Standard Soapstone Corp., 150 Broadway, has been incorporated by W. W. Benjamin and associates to take over the business and plants of the Phoenix Stone Co.

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	9.00 to 10.00
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.00
Algerian foundry and basic, 50 to 54 per cent	8.50 to 9.00

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.	nominal
Indian, minimum 47 per cent.	nominal
Caucasian, 53 to 55 per cent.	
....Washed, 43 to 45 cents c.i.f. tidewater	

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$16.00
Washed gravel, imported duty paid eastern tidewater, per net ton	16.50 to 17.50

A steam-turbo electric power station and a railroad six miles long are being built in Nelson county, Va., where new works are to be opened.

WEST SENECA, N. Y. — Ebenezer Electric Plating Works has been incorporated with $5600 capital by P. Mildenberger, H. Mildenberger and A. Betki. Van Arsdale, Hofheins & Vandermuelen, Buffalo, are attorneys.

CHARLOTTE, N. C.—First National Bank building, 20 stories, for which bids will be taken shortly by Lockwood, Greene & Co., engineers, Boston, will include four passenger elevators, all-metal sash and ventilating system.

MICAVILLE, N. C.—North State Feldspar Corp. will add a grinding unit and accessory equipment, as well as a steam-electric power plant. S. J. Hamilton is president.

CINCINNATI, O.—P. B. Warner Equipment Co., Barkley street and Liston avenue, will rebuild two structures recently burned.

CLEVELAND.—Sheet Metal Products Co. has been incorporated with $25,000 capital by Benjamin B. Daggett, Maude E. Thompson, Rowland P. Daggett, Clarence W. Driver and David Stonson.

DAYTON, O.—Dayton Rolled Metal Co. has been incorporated with $25,000 capital by H. M. Huffman, Charles F. Budroe, Ernest Gebhardt, Charles McClintock and Arthur Morgan.

FREMONT, O.—Fremont Metal Body Co. has been incorporated with $500 capital to manufacture metal bodies for automobiles and trucks by George D. Welles, Henry E. Seney, Frank A. Harrington, Charles Weirich and Ray E. Zachman.

MANSFIELD, O.—Mansfield Vitreous Enameling Co., E. M. Olin president, Eclipse street and First avenue, is building an addition.

TOLEDO, O.—New York Central railroad will build a machine shop 60 x 80 feet at Airline Junction, requiring several jib cranes. H. K. Ferguson Co., Cleveland, has the general contract.

TULSA, OKLA.—Mid-West Steel & Iron Co. has been incorporated with $1000 capital by Isaac Plost, R. P. Conroy and Dora Plost.

PORTLAND, ORE.—Electric Steel Foundry has been incorporated with $150,000 capital to conduct a foundry by Leonard Schad, G. W. Schad and George F. Schott.

PORTLAND, ORE.—Baar & Cunningham, consulting engineers, are preparing plans for a municipal waterworks system for Prosser, Wash., to cost $125,000, for which a bond issue has been voted.

BIRDSBORO, PA.—Samuel T. Wagner, architect, has closed on bids for a power house and tower house.

EASTON, PA.—Keubler Foundries, Inc. is installing a pulverized fuel system and making other improvements in its plant.

HAMBURG, PA.—J. G. Speidel Foundry Co. has started construction of a 1-story foundry 80 x 90 feet, a core oven department 20 x 30 feet and a sand house and other buildings.

KUTZTOWN, PA.—Topton Foundry Co., recently bought by the Klein Stove Co., Philadelphia, is building an addition 120x150 feet for use as a foundry.

PHILADELPHIA—The Ballinger Co., architect, has closed bids on a boiler plant addition for the Viscose Co. at Marcus Hook, Pa.

PHILADELPHIA—M. F. Wilfong Iron Works, J. R. Wilfong president, is having plans prepared for a 1-story foundry building.

PHILADELPHIA—Hall Planetary Machine Co., Abbottsford road and Fox street, will build a 1-story addition. Henry P. Schneider, 3713 Old York road, has the general contract.

PHILADELPHIA—The Jacob Meyer Sons Co., Fifty-first street and Lancaster avenue, will start work at once on a warehouse and manufacturing building, costing $25,000.

PHILADELPHIA—General contract for a $35,000 plant addition for Joseph J. Flynn, Apsley street, east of Wayne, was awarded to Cramp & Co., Benckla building.

PHILADELPHIA—Contract has been awarded for an $11,000 factory building at Cloud and Church streets, for Norman M. Haas, to Charles J. W. Platt, 625 North Sixth street.

PHILADELPHIA—Property has been acquired at Roosevelt boulevard and Palethrop street by the Haines, Jones & Cadbury Co., 1136 Ridge avenue, for a new plant for the manufacture of plumbers' brass goods.

WILKES-BARRE, PA.—Hazzard Mfg. Co., J. T. Coyningham president, is taking bids on an addition to its plant for the manufacture of wire rope, 3-stories, 110x190 feet.

CLINTON, S. C.—Clinton Cotton Mills has awarded contract to Lockwood, Greene & Co., engineers, Boston, to electrify its mills and install new lighting system.

SEATTLE.— Best Universal Lock Co. has bought four acres on East Marginal way and will build a brass foundry on the site.

CHARLESTON, W. VA.—Logan Machine & Electric Co., Monitor Junction, W. Va., is having plans made for rebuilding the portion of its plant recently burned.

GREEN BAY, WIS.—The Northern Paper Co., Green Bay, will build a 16,000 horsepower hydroelectric generating plant at White Rapids on the Menominee river, 40 miles north of Marinette, Wis., at a cost of $1,000,000. The first unit will produce about 8000 horsepower, all of which is required for its own plant.

MILWAUKEE.—Lupinski & Wolff, 400 Camp building, will build a 1-story garage and repair shop, 66x121 feet, at 281-283 Van Buren street.

MILWAUKEE.—A charter has been granted to the Ajax Sheet Metal & Iron Works. The capital stock is $10,000 and the incorporators are A. H. Willson, W. C. Duwe and H. M. Willson. The concern will manufacture architectural and ornamental sheet metal products.

RACINE, WIS.—A. C. Gales, 1638 Villa street, is having plans drawn for a 2-story machine shop 40x80 feet, by A. L. Flagel, architect, Baker building.

RACINE, WIS.—The Wisconsin Gas & Electric Co., a North American subsidiary, will spend $100,000 building a new sub-station with 30,000 kilovolt ampere capacity. The power transformer equipment has been let to the General Electric Co., and the switch gear and switchboard equipment to the Westinghouse Electric & Mfg. Co.

WATERLOO, WIS.—The Drew Barn Equipment Co. has been incorporated with $25,000 capital stock to take over a local industry manufacturing barn and dairy equipment, steel fixtures, conveyors, etc. Incorporators are H. H. Drew, H. D. Gaebler and H. N. Smith.

Refractories

FIRE CLAY BRICK
Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 46.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	36.00 to 40.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	41.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	$40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK
Per Net Ton Seaboard Base

9 x 4½ x 2½	$65.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$48.00

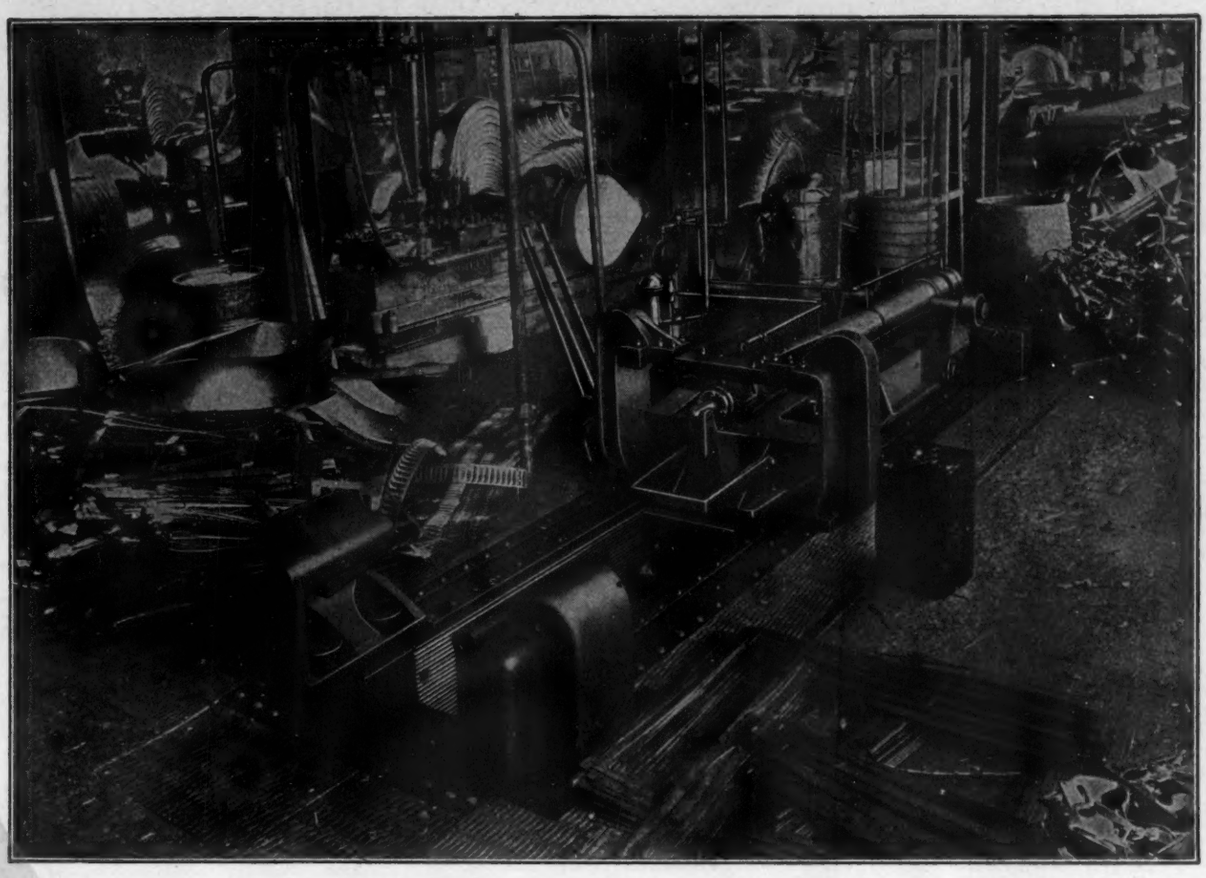
New Trade Publications

BALL BEARINGS—A catalog of industrial applications of ball bearings and transmissions has been issued by the Fafnir Bearing Co., New Britain, Conn. It is illustrated fully by photographs of actual installations and contains data on the principles of ball bearings and transmission equipment. In this respect it becomes a handbook for those interested in the theoretical side. Various new features brought out since the preceding catalog make this issue of unusual interest.

HACK SAWS—Under the title of "Hacksawology" the Simonds Saw & Steel Co., Fitchburg, Mass., presents a pocket-size booklet that is indeed a discourse on hack saws and their use. After describing the making of its saws the company gives several pages of valuable hints on how to choose and use a hack saw for the best results. A chart is also given on which is shown the dimensions of various saws and the number of teeth which should be used for various materials.

FLOOR COVERING—To minimize fatigue due to standing on factory floors, the Carey Co., Cincinnati, offers reasons in a bulletin why use of its type of floor covering will accomplish much in increasing physical well-being of workers and thus their output.

NET PROFITS—That real profits may be obtained from small lot production when proper equipment is used is the purpose of a booklet by the Warner & Swasey Co. Cleveland. The text is based on a thorough analysis of the problems of small lot production and the material is from plants of the company's customers, selected to show average performance and not phenomenal results. The booklet shows how turret lathes can be used to give a profit on lots of five to 15 at a time.



Typical Installation in Well-Known Automobile Plant

WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

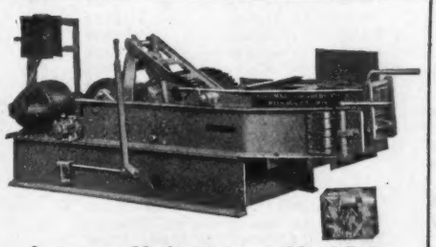
It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.



Logemann Mechanical-type Metal Baler

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3 -inch	62	50½

Lap Weld

1-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS

Butt Weld

⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾ to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
7 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld

⅛ and ¼-inch	+19	+34
⅜-inch	21	7
½-inch	28	12
¾ to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
½-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

Pittsburgh less carload discounts. 4 points larger	Carload

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2¼-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½,5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon, 0.10 to 0.20 per cent	55 off
Carbon, 0.30 to 0.40 per cent	50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¾c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5½-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼ inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base.

Extras per Pound for Width or Diameter

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square feet, if ordered to weight—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼ inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including ⅛-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 inches Wide

Plates less than ¼-inch gage to and including ⅛-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept., or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH or DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet. No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (including straight taper plates).

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .30c